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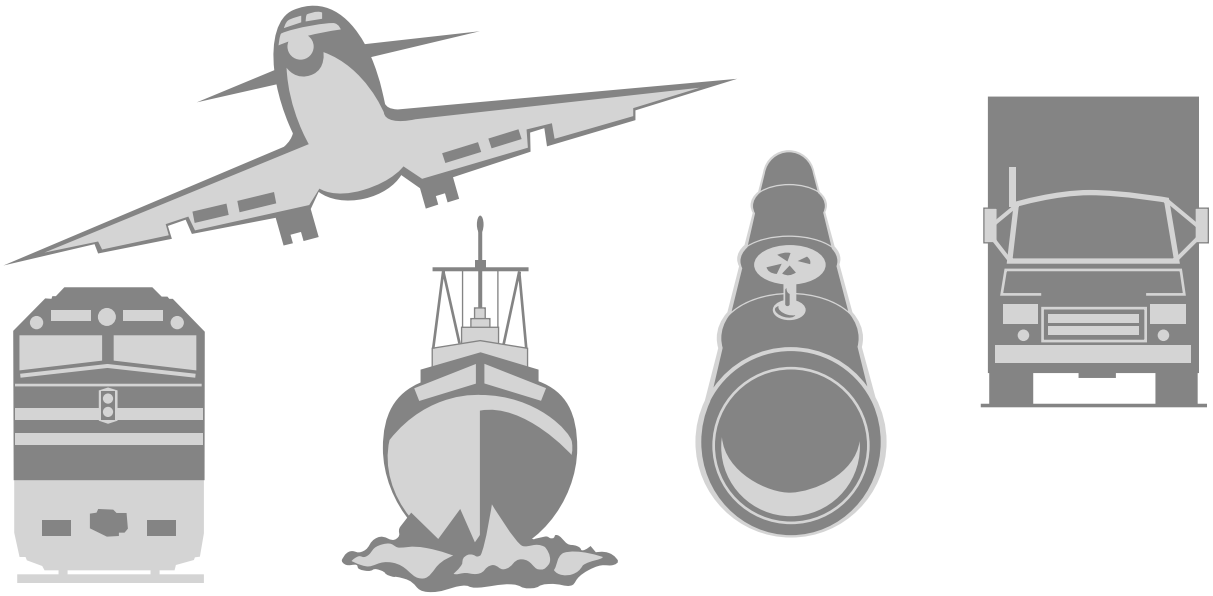
NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

SAFETY RECOMMENDATIONS

ADOPTED NOVEMBER 2002



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 1, 2002

In reply refer to: H-02-26 through -28

Honorable Jeffrey W. Runge, M.D.
Administrator
National Highway Traffic Safety Administration
Washington, D.C. 20590

Fifteen-passenger vans, which make up about 0.25 percent of the passenger vehicle fleet in the United States, are frequently used to transport school sports teams, van pools, church groups, and other groups. Although they are involved in a proportionate number of fatal accidents compared to their percentage in the fleet, they are involved in a higher number of single-vehicle accidents involving rollovers than are other passenger vehicles. Data for 1991–2000 in the Fatal Analysis Reporting System (FARS) of the National Highway Traffic Safety Administration (NHTSA) indicate that about 52 percent of the 15-passenger vans involved in single-vehicle, fatal accidents experience a rollover (as a primary or subsequent event) compared to 33 percent of the passenger automobiles involved in such accidents. Additionally, 81 percent of the 15-passenger van occupant fatalities occur in single-vehicle rollover accidents.

Research has shown that among other factors, accidents in rural areas, vehicles with higher occupancy levels, vehicle speed, driver alcohol/drug involvement, and younger driver age are associated with rollover propensity.[1] However, much of the previous work was done on passenger vehicles and excluded 15-passenger vans.[2] The Safety Board thus conducted analyses on the FARS data for single-vehicle, fatal 15-passenger van accidents that occurred from 1991 through 2000 and found similar results, suggesting that occupancy level and vehicle speed (measured by either travel speed or posted speed limit) are consistently associated with van rollover.[3] Other accident characteristics have also been shown to be related to vehicle rollover but with less reliability.

[1] (a) W. Riley Garrott, Barbara Rhea, Rajesh Subramanian, and Gary J. Heydinger, *The Rollover Propensity of Fifteen-Passenger Vans*, Research Note (Washington, DC: NHTSA, April 2001). (b) T.M. Klein, *A Statistical Analysis of Vehicle Rollover Propensity and Vehicle Stability*, SAE Tech. Pap. 920584 (Warrendale, PA: Society of Automotive Engineers, 1992) 135-150. (c) "Consumer Information Regulations; Federal Motor Vehicle Safety Standards; Rollover Resistance; Final Rule [49 CFR Part 575]," *Federal Register* Vol. 66, No. 9, dated January 12, 2001: 3388-3437.

[2] NHTSA informed Safety Board staff on June 4, 2002, that the agency is currently preparing a technical report that examines single-vehicle, fatal 15-passenger van rollover accidents. According to NHTSA, the FARS data analysis has been extensive and evaluates the effect of several factors such as speed, number of vehicle occupants, vehicle maneuvers, age of the driver, and alcohol involvement on vehicle rollover. NHTSA expects to publish this report in 2002.

[3] National Transportation Safety Board, *Evaluation of the Rollover Propensity of 15-passenger Vans*, Safety Report NTSB/SR-02/03 (Washington, DC: NTSB, 2002).

Because these vans are designed to carry 15 passengers and frequently are used by various organizations to transport many passengers to activities, the Safety Board is particularly concerned about the relationship between occupancy level and vehicle rollover. NHTSA research reported in 2001 that 15-passenger vans with 10 or more occupants had three times the rollover ratio than did those with fewer than 10 occupants.[4] The same analyses conducted by the Safety Board on the FARS data yielded higher rollover ratios for all levels of occupancy levels but similar magnitudes of increase in the rollover ratio when comparing lightly loaded to fully loaded vans. Fifteen-passenger vans with 10–15 occupants had a rollover ratio of 85.0 percent compared with a ratio of 28.3 percent for vans with fewer than 5 occupants.

Simulations conducted for the NHTSA research illustrated the adverse effects that a fully loaded 15-passenger van can have on the vehicle's handling properties and rollover propensity. Fully loading or nearly loading a 15-passenger van causes the center of gravity to move rearward and upward, which increases the vehicle's rollover propensity and could increase the potential for driver loss of control in emergency maneuvers.[5]

NHTSA has been evaluating vehicle rollover for several years. In the late 1990s, NHTSA launched a vehicle dynamic rollover propensity research program. Phases I, II, and III evaluated a broad range of dynamic testing maneuvers that might induce on-road, untripped rollovers. The program tested 12 vehicles (3 passenger cars, 3 light trucks, 3 sport utility vehicles, 2 eight-passenger vans, and 1 seven-passenger van) but no 15-passenger vans. As a result of the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act of 2000, NHTSA is conducting phases IV, V, and VI of its dynamic rollover propensity program. These phases of research will continue to look at additional testing maneuvers and examine various influences on rollover testing. Two test maneuvers and two load conditions are proposed in NHTSA's notice of proposed rulemaking issued October 7, 2002 (*Federal Register*, Vol. 67, No. 194). NHTSA has informed the Safety Board that 15-passenger vans will not be included in this testing because the *Federal Motor Vehicle Safety Standards* (FMVSS) define a motor vehicle designed to carry more than 10 persons as a bus (Title 49 *Code of Federal Regulations* Part 571.3).

NHTSA originally proposed rulemaking concerning vehicle rollovers in 1973 with an advance notice of proposed rulemaking on minimum performance rollover resistance. It has periodically taken rulemaking action since; however, there are no rollover standards at present for any highway vehicle.

[4] Garrott and others, 2001.

[5] (a) NHTSA simulations, reported in Garrott and others, 2001. (b) NHTSA press release packet, April 15, 2002. (c) General vehicle dynamics of how increasing the center of gravity height affects rollover are discussed in Thomas D. Gillespie, "Rollover," Chapter 9 in *Fundamentals of Vehicle Dynamics* (Warrendale, PA: Society of Automotive Engineers, 1992) 309-333.

In 2001, NHTSA's New Car Assessment Program (NCAP) was expanded to include consumer information on the rollover risk of passenger cars and light, multipurpose passenger vehicles and trucks.[6] The expansion does not extend to vehicles that carry more than 10 passengers. The program's rollover resistance rating system, available beginning with model year 2001 vehicles, estimates the risk of rolling over in a single-vehicle crash; the system does not predict the likelihood of such a crash.

The NCAP rollover resistance rating is based on the static stability factor (SSF). The SSF used is based on measurements for a driver-only load condition. Static measures of stability (SSF, tilt table ratio, and critical sliding velocity) have been shown to be important factors in understanding vehicle rollover. NHTSA, in its 2001 research, compared the static stability factors of two 7-passenger vans and a 15-passenger van under lightly loaded and fully loaded conditions. Although the SSF decreased for all three vans from the lightly loaded condition to the fully loaded condition, the change was the greatest for the 15-passenger van: the SSF decreased 3 percent for one 7-passenger van, 5 percent for the other 7-passenger van, and 11 percent for the 15-passenger van.

In response to the Department of Transportation and Related Agencies Appropriations Act of 2001 (Public Law 106–346), the National Research Council of the National Academy of Sciences (NAS) completed a review of NHTSA's rollover resistance rating system.[7] It concluded that the SSF captures important vehicle characteristics related to rollover propensity and is strongly correlated with the outcome of actual crashes (rollover or no rollover). However, it also concluded that the NCAP rollover resistance rating system, which uses numbers of stars to indicate rollover risk, is likely to be of limited use in presenting practical information to the public. The NAS report recommended, in part, that NHTSA should (a) "pursue its research on driving maneuver tests for rollover resistance . . . with the objective of developing one or more dynamic tests that can be used to assess transient vehicle behavior leading to rollover"; and (b) "develop revised consumer information on rollover that incorporates the results of one or more dynamic tests on transient vehicle behavior to complement the information from static measures, such as SSF."

Although NHTSA has initiated rulemaking activities concerning vehicle rollovers, established a vehicle rollover resistance rating system, and is currently examining dynamic testing procedures, these programs do not extend to 15-passenger vans. Given their high rate of rollover involvement in single-vehicle accidents, particularly under fully loaded conditions for which they are designed and are being used, the Safety Board believes that 15-passenger vans should be included in dynamic testing and proposed rollover resistance ratings for this class of vehicle. Information from the dynamic testing also has the potential to develop a dynamic testing protocol that could supplement the NCAP rollover resistance rating system. Therefore, the Safety Board recommends that NHTSA include 15-passenger vans in its dynamic testing

[6] The NCAP program was established in 1978 with the purpose of providing consumers with a measure of the relative safety potential of vehicles in frontal crashes. NCAP information includes results from frontal and side crash tests as well as rollover resistance ratings. The ultimate goal of the program is to improve occupant safety by providing market incentives for vehicle manufacturers to voluntarily design their vehicles to better protect occupants in a crash rather than by regulatory devices.

[7] Transportation Research Board, National Research Council. *An Assessment of the National Highway Traffic Safety Administration's Rating System for Rollover Resistance*. Prepublication copy.

program. The dynamic testing should test the performance of 15-passenger vans under various load conditions.

In April 2001, following several high publicity 15-passenger van accidents, NHTSA published a consumer advisory containing a cautionary warning to users of 15-passenger vans about an increased rollover risk under certain conditions. NHTSA issued a second consumer advisory in April 2002. The NCAP program also serves as an available source of consumer information about the safety potential of vehicles in crashes; however, the NCAP rollover resistance rating system does not currently include 15-passenger vans. The Safety Board believes that, at a minimum, the rollover resistance rating system should be extended to include 15-passenger vans. Therefore, the Safety Board recommends that NHTSA extend the NCAP rollover resistance program to 15-passenger vans, especially for various load conditions. The inclusion of 15-passenger vans in NHTSA's dynamic testing program, as recommended in the preceding paragraph, would provide valuable information by which to supplement the rollover resistance rating system. Thus, the Board also recommends that NHTSA, in extending the rollover resistance program to 15-passenger vans, use the dynamic testing results of 15-passenger vans to supplement the static measures of stability in the NCAP rollover resistance program.

Various technological systems have been developed to assist drivers in maintaining control of the vehicle; for example, antilock brakes, traction control, lane departure systems, and electronic stability control (ESC) systems. Antilock brakes use speed sensors, valves, pumps, and controllers to stop the vehicle in a safe manner. Traction control systems sense when a tire is slipping or losing traction and automatically activate the brakes or slow down engine speed. Lane departure systems typically alert the driver when the vehicle has departed from the driving lane. ESC systems are computer-controlled systems that attempt to stabilize the vehicle by monitoring a vehicle's movement and the direction the driver is steering. If the driver inputs and the vehicle response do not correspond, computer controls intervene to enhance the driver's ability to maintain control of the vehicle by selectively braking individual wheel(s), or changing power applied to the wheels. Future ESC systems will likely include inputs to steering and differential power control to the wheels.

Some of these technologies are currently available on certain motor vehicles, including some sport utility vehicles and minivans. Antilock brakes are currently available on 15-passenger vans, but traction control systems, lane departure systems, and ESC systems are not. Given the rollover propensity of 15-passenger vans, such technological systems may have potential to assist drivers in maintaining control of these vehicles. The Safety Board therefore recommends that NHTSA, in conjunction with the manufacturers of 15-passenger vans, evaluate, and test as appropriate, the potential of technological systems, particularly electronic stability control systems, to assist drivers in maintaining control of 15-passenger vans. The Board has issued a companion recommendation to the manufacturers of 15-passenger vans.

Therefore, the National Transportation Safety Board recommends that the National Highway Traffic Safety Administration:

Include 15-passenger vans in the National Highway Traffic Safety Administration dynamic testing program. The dynamic testing should test the performance of 15-passenger vans under various load conditions. (H-02-26)

Extend the National Car Assessment Program (NCAP) rollover resistance program to 15-passenger vans, especially for various load conditions, and use the dynamic testing results of 15-passenger vans, as described in Safety Recommendation H-02-26, to supplement the static measures of stability in the NCAP rollover resistance program. (H-02-27)

Evaluate, in conjunction with the manufacturers of 15-passenger vans, and test as appropriate, the potential of technological systems, particularly electronic stability control systems, to assist drivers in maintaining control of 15-passenger vans. (H-02-28)

The Safety Board also issued a safety recommendation to the manufacturers of 15-passenger vans.

Please refer to Safety Recommendations H-02-26 through -28 in your reply. If you need additional information, you may call (202) 314-6177.

Acting Chairman CARMODY, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

Original Signed

By: Carol J. Carmody
Acting Chairman

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 1, 2002

In reply refer to: H-02-29

Mr. William Clay Ford, Jr.
Chairman and Chief Executive Officer
Ford Motor Company
16800 Executive Plaza Drive
Post Office Box 6248
Dearborn, Michigan 48121

Mr. G. Richard Wagoner, Jr.
President and Chief Executive Officer
General Motors Corporation
300 Renaissance Center
Mail Code 482-C-25-D81
Detroit, Michigan 48265-3000

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your company to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

This recommendation addresses the potential of technological systems, particularly electronic stability control systems, to assist drivers in maintaining control of 15-passenger vans. The recommendation is derived from the Safety Board's evaluation of the rollover propensity of 15-passenger vans and is consistent with the findings published in the Board's safety report.[1] As a result of this report, the Safety Board has issued four safety recommendations, one of which is addressed to the manufacturers of 15-passenger vans. Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

Fifteen-passenger vans represent about 0.25 percent of the passenger vehicle fleet in the United States. Historically, Dodge and Ford have manufactured the majority of 15-passenger vans, with Chevrolet and GMC making up the remainder of the fleet. Dodge, however, ceased production of the vehicles in June 2002.

Although 15-passenger vans are involved in a proportionate number of fatal accidents compared to their percentage in the fleet, they are involved in a higher number of single-vehicle accidents involving rollovers than are other passenger vehicles. Data for 1991–2000 in the Fatal Analysis Reporting System (FARS) of the National Highway Traffic Safety Administration (NHTSA) indicate that about 52 percent of the 15-passenger vans involved in single-vehicle, fatal accidents experience a rollover (as a primary or subsequent event) compared to 33 percent

[1] National Transportation Safety Board, *Evaluation of the Rollover Propensity of 15-passenger Vans*, Safety Report NTSB/SR-02/03 (Washington, DC: NTSB, 2002).

of the passenger automobiles involved in such accidents. Additionally, 81 percent of the 15-passenger van occupant fatalities occur in single-vehicle rollover accidents.

Research has shown that among other factors, accidents in rural areas, vehicles with higher occupancy levels, vehicle speed, driver alcohol/drug involvement, and younger driver age are associated with rollover propensity.[2] However, much of the previous work was done on passenger vehicles and excluded 15-passenger vans.[3] In conjunction with the Safety Board's evaluation of the rollover propensity, the Board conducted analyses on the FARS data for single-vehicle, fatal 15-passenger van accidents that occurred from 1991 through 2000 and found similar results, suggesting that occupancy level and vehicle speed (measured by either travel speed or posted speed limit) are consistently associated with van rollover. Other accident characteristics have also been shown to be related to vehicle rollover but with less reliability.

Because these vans are designed to carry 15 passengers and frequently are used to transport school sports teams, van pools, church groups, and other groups to various activities, the Safety Board is particularly concerned about the relationship between occupancy level and vehicle rollover. NHTSA research reported in 2001 that 15-passenger vans with 10 or more occupants had three times the rollover ratio than did those with fewer than 10 occupants.[4] The same analyses conducted by the Safety Board on the FARS data yielded higher rollover ratios for all levels of occupancy levels but similar magnitudes of increase in the rollover ratio when comparing lightly loaded to fully loaded vans. Fifteen-passenger vans with 10–15 occupants had a rollover ratio of 85.0 percent compared with a ratio of 28.3 percent for vans with fewer than 5 occupants.

Simulations conducted for the NHTSA research illustrated the adverse effects that a fully loaded 15-passenger van can have on the vehicle's handling properties and rollover propensity. Fully loading or nearly loading a 15-passenger van causes the center of gravity to move rearward and upward, which increases the vehicle's rollover propensity and could increase the potential for driver loss of control in emergency maneuvers.[5]

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NHTSA originally proposed rulemaking concerning vehicle rollovers in 1973 with an advance notice of proposed rulemaking on minimum performance rollover resistance. It has periodically taken rulemaking action since; however, there are no rollover standards at present for any highway vehicle.

In 2001, NHTSA's New Car Assessment Program (NCAP) was expanded to include consumer information on the rollover risk of passenger cars and light, multipurpose passenger vehicles and trucks.[6] The expansion does not extend to vehicles that carry more than 10 passengers. The program's rollover resistance rating system, available beginning with model year 2001 vehicles, estimates the risk of rolling over in a single-vehicle crash; the system does not predict the likelihood of such a crash.

The NCAP rollover resistance rating is based on the static stability factor (SSF). The SSF used is based on measurements for a driver-only load condition. Static measures of stability (SSF, tilt table ratio, and critical sliding velocity) have been shown to be important factors in understanding vehicle rollover. NHTSA, in its 2001 research, compared the static stability factors of two 7-passenger vans and a 15-passenger van under lightly loaded and fully loaded conditions. Although the SSF decreased for all three vans from the lightly loaded condition to the fully loaded condition, the change was the greatest for the 15-passenger van: the SSF decreased 3 percent for one 7-passenger van, 5 percent for the other 7-passenger van, and 11 percent for the 15-passenger van.

In response to the Department of Transportation and Related Agencies Appropriations Act of 2001 (Public Law 106–346), the National Research Council of the National Academy of Sciences (NAS) completed a review of NHTSA's rollover resistance rating system.[7] It concluded

[6] The NCAP program was established in 1978 with the purpose of providing consumers with a measure of the relative safety potential of vehicles in frontal crashes. NCAP information includes results from frontal and side crash tests as well as rollover resistance ratings. The ultimate goal of the program is to improve occupant safety by providing market incentives for vehicle manufacturers to voluntarily design their vehicles to better protect occupants in a crash rather than by regulatory devices.

[7] Transportation Research Board, National Research Council. *An Assessment of the National Highway Traffic Safety Administration's Rating System for Rollover Resistance*. Prepublication copy.

that the SSF captures important vehicle characteristics related to rollover propensity and is strongly correlated with the outcome of actual crashes (rollover or no rollover). However, it also concluded that the NCAP rollover resistance rating system, which uses numbers of stars to indicate rollover risk, is likely to be of limited use in presenting practical information to the public. The NAS report recommended, in part, that NHTSA should (a) "pursue its research on driving maneuver tests for rollover resistance . . . with the objective of developing one or more dynamic tests that can be used to assess transient vehicle behavior leading to rollover"; and (b) "develop revised consumer information on rollover that incorporates the results of one or more dynamic tests on transient vehicle behavior to complement the information from static measures, such as SSF."

Although NHTSA has initiated rulemaking activities concerning vehicle rollovers, established a vehicle rollover resistance rating system, and is currently examining dynamic testing procedures, these programs do not extend to 15-passenger vans. Given their high rate of rollover involvement in single-vehicle accidents, particularly under fully loaded conditions for which they are designed and are being used, the Safety Board believes that 15-passenger vans should be included in dynamic testing and proposed rollover resistance ratings for this class of vehicle. Information from the dynamic testing also has the potential to develop a dynamic testing protocol that could supplement the NCAP rollover resistance rating system. Therefore, the Safety Board has recommended that NHTSA include 15-passenger vans in its dynamic testing program. The dynamic testing should test the performance of 15-passenger vans under various load conditions.

In April 2001, following several high publicity 15-passenger van accidents, NHTSA published a consumer advisory containing a cautionary warning to users of 15-passenger vans about an increased rollover risk under certain conditions. NHTSA issued a second consumer advisory in April 2002. The NCAP program also serves as an available source of consumer information about the safety potential of vehicles in crashes; however, the NCAP rollover resistance rating system does not currently include 15-passenger vans. The Safety Board believes that, at a minimum, the rollover resistance rating system should be extended to include 15-passenger vans. Therefore, the Safety Board has recommended that NHTSA extend the NCAP rollover resistance program to 15-passenger vans, especially for various load conditions. The inclusion of 15-passenger vans in NHTSA's dynamic testing program, as recommended by the Safety Board, would provide valuable information by which to supplement the rollover resistance rating system. Thus, the Board also recommended that NHTSA, in extending the rollover resistance program to 15-passenger vans, use the dynamic testing results of 15-passenger vans to supplement the static measures of stability in the NCAP rollover resistance program.

Various technological systems have been developed to assist drivers in maintaining control of the vehicle; for example, antilock brakes, traction control, lane departure systems, and electronic stability control (ESC) systems. Antilock brakes use speed sensors, valves, pumps, and controllers to stop the vehicle in a safe manner. Traction control systems sense when a tire is slipping or losing traction and automatically activate the brakes or slow down engine speed. Lane departure systems typically alert the driver when the vehicle has departed from the driving lane. ESC systems are computer-controlled systems that attempt to stabilize the vehicle by monitoring a vehicle's movement and the direction the driver is steering. If the driver inputs and

the vehicle response do not correspond, computer controls intervene to enhance the driver's ability to maintain control of the vehicle by selectively braking individual wheel(s), or changing power applied to the wheels. Future ESC systems will likely include inputs to steering and differential power control to the wheels.

Some of these technologies are currently available on certain motor vehicles, including some sport utility vehicles and minivans. Antilock brakes are currently available on 15-passenger vans, but traction control systems, lane departure systems, and ESC systems are not. Given the rollover propensity of 15-passenger vans, such technological systems may have potential to assist drivers in maintaining control of these vehicles. The Safety Board therefore recommends that the manufacturers of 15-passenger vans evaluate, in conjunction with the National Highway Traffic Safety Administration, and test as appropriate, the potential of technological systems, particularly electronic stability control systems, to assist drivers in maintaining control of 15-passenger vans. The Board has issued a companion recommendation to the National Highway Traffic Safety Administration.

Therefore, the National Transportation Safety Board recommends that the manufacturers of 15-passenger vans:

> Evaluate, in conjunction with the National Highway Traffic Safety Administration, and test as appropriate, the potential of technological systems, particularly electronic stability control systems, to assist drivers in maintaining control of 15-passenger vans. (H-02-29)

The Safety Board also issued safety recommendations to the National Highway Traffic Safety Administration. In your response to the recommendation in this letter, please refer to Safety Recommendation H-02-29. If you need additional information, you may call (202) 314-6177.

Acting Chairman CARMODY, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

Original Signed

By: Carol J. Carmody
Acting Chairman

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 8, 2002
In reply refer to: H-02-30 and -31

29 State Governors and Mayor of the District of Columbia
(see distribution list)

The National Transportation Safety Board is an independent federal agency charged by Congress with investigating transportation accidents, determining their probable causes, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge you to take action on the safety recommendations in this letter. The Safety Board is interested in these recommendations because they are designed to prevent accidents and save lives.

These recommendations supplement prior Safety Board initiatives to reduce the numbers of teenaged children killed in motor vehicle crashes; specifically, these recommendations address restricting the number of passengers that young novice drivers can carry in their motor vehicles until they receive an unrestricted license and requiring that the supervising adult driver in the learner's permit stage of the graduated licensing law be at least 21 years old. These recommendations are derived from the Board's analysis of the National Highway Traffic Safety Administration's (NHTSA's) Fatality Analysis Reporting System (FARS), the Board's numerous investigations involving young novice drivers, the Board's longstanding state advocacy program related to graduated licensing issues, and the Board's review of relevant research on this issue. As a result of these activities, the Board is issuing 2 new safety recommendations to 29 states and the District of Columbia. Information supporting these recommendations is discussed below. The Board would appreciate receiving a response from you within 90 days addressing the actions you have taken or intend to take to implement these recommendations.

According to data from NHTSA's FARS, from 1997 through 2001, 16,656 persons died in all crashes involving young novice drivers ages 14 through 17.[1] Of these fatalities, 8,934 were drivers and 6,524 were passengers. In the same crashes, 1,198 non-occupants (pedestrians and cyclists, as examples) also died. Because it is unknown whether the young novice drivers were at fault in the multiple-vehicle crashes but likely were responsible for single-vehicle crashes, the Safety Board examined single-vehicle crashes involving drivers who were 14 through 17 years old to determine the numbers of teenaged children killed in those crashes involving young novice drivers. From 1997 through 2001, 14- through 17-year-old drivers were involved in 6,796 single-vehicle fatal crashes; in these crashes, 7,574 fatalities occurred, of which about 41 percent (3,088) were passengers in the vehicle. Sixty-seven percent of these fatally injured passengers (2,077 of 3,088) were between the ages of 15 and 19 (figure 1).[2] From 1997 through 2001, the

[1] The FARS system does not provide information on the causality of fatal highway crashes.

[2] Figures and tables are located in the Appendix.

number of persons killed in crashes involving young drivers in the United States changed little, although the number of fatally injured drivers ages 14 through 17 declined slightly (figure 2).

The Safety Board has investigated several accidents over the years involving young novice drivers. The following accidents illustrate the tragic consequences of allowing inexperienced young drivers who have just recently obtained their licenses to drive with multiple teenage passengers in the vehicle.

At 3:55 p.m. on Tuesday, June 18, 2002, a 1991 Chevrolet Lumina, driven by a 16-year-old female and occupied by two other 16-year-old females, was southbound on a two-way country lane and was attempting to cross Route 20 near Lafayette, New York.[3] At the same time the Lumina entered the intersection, a 1999 International tractor/semi-trailer combination vehicle, hauling about 40,000 pounds of steel, entered the intersection westbound on Route 20. The evidence did not clearly indicate whether the Lumina driver had stopped at the stop sign before attempting to cross Route 20. The sight distance at the stop sign was not limited. The combination vehicle was not required to stop. The truck struck the Chevrolet on the driver's door and both vehicles veered off the highway in a southwesterly direction. The driver and front passenger of the Chevrolet were ejected. All the occupants of the Chevrolet received fatal injuries. The driver of the truck received minor injuries. The teenage driver of the Chevrolet had just received her driver's license on April 10, 2002.[4]

About 9:30 p.m. on August 3, 2001, a 16-year-old male was driving a 1999 Ford Taurus in the eastbound inside lane of U.S. Highway 62, 6 miles east of Fort Gibson, Oklahoma.[5] The posted speed limited was 65 mph, the weather was clear and dark, and the roadway was dry. According to witnesses, the teenage driver was driving about 95 mph when he came upon another vehicle in his travel path. He attempted to make an evasive lane change into the outside lane to avoid hitting this vehicle and, in doing so, collided with the rear of a 1999 Peterbilt semi-trailer dump truck in the eastbound outside lane. The impact raised the rear end of the Ford Taurus, causing its windshield and roof to strike the rear of the semi-trailer; the Taurus ultimately came to rest in a southeasterly direction, about 23 feet east of the point of impact. The driver and all three rear seat passengers sustained fatal injuries. The front seat passenger, the only one wearing a seatbelt, sustained serious injuries. All four passengers were 16 years old. The driver of the combination vehicle sustained no injuries. There was no indication of drug and/or alcohol use by either driver prior to the collision. The 16-year-old driver had a valid driver's license with no restrictions.[6]

About 2:00 p.m. on Wednesday, July 31, 2002, a sport utility vehicle (SUV) driven by a recently licensed 15-year-old and carrying five teenage passengers between the ages of 15 and 18 crashed while traveling west at an estimated speed of between 70 and 76 mph on a highway near

[3] NTSB Accident Number HWY-02-IH023.

[4] New York has a graduated licensing law, but does not have a passenger restriction provision.

[5] NTSB Accident Number HWY-01-IH034.

[6] Oklahoma did not have a graduated licensing law at the time of the accident and currently has no graduated licensing law.

Columbus, Montana.[7] The posted highway speed was 70 mph, and the vehicle was negotiating "S" curves and a 5-percent upgrade hill. Weather and road conditions at the time of the accident were clear and dry. According to passenger statements, the driver of the vehicle was engaged in conversations with the passengers and was turning around and talking to passengers in the rear seat when the vehicle went off the road; the driver then overcorrected in an effort to return to the roadway, causing the SUV to go into a broadside skid and to flip three times. The driver and one passenger were ejected through the front of the vehicle, two other passengers were ejected from the side of the vehicle, and two remained inside. The driver suffered fatal injuries. The passengers were transported to area hospitals, where one was treated and released, two were listed in serious condition, and two were listed in critical condition. None of the vehicle's occupants had been wearing seatbelts. No alcohol or drugs were involved in this accident. The driver had received her license on April 20, 2002, providing her with just over 100 days of (potential) licensed driving experience at the time of the accident.[8]

According to NHTSA, in 2000, 6.76 percent of the driving population was age 20 or younger (12.884 million drivers age 20 or younger, 190.625 million total drivers). Of all drivers involved in fatal accidents, 14.28 percent were 15 to 20 years old (8,155 15- to 20-year-old drivers; 57,090 total drivers).

On March 11, 1993, the Safety Board issued recommendations asking the states to take action to reduce the number of youth-related highway crashes and fatalities.[9] Because of the overrepresentation of young novice drivers in traffic fatalities, the Board identified several actions the states could take to reduce these crashes and fatalities, including making improvements in minimum drinking age laws and enforcement, instituting a zero blood alcohol content requirement for drivers under age 21, and making changes in driver licensing and restrictions.

In its 1993 letter, the Safety Board specifically asked the 50 states to do the following relative to graduated licensing:

> Enact laws to provide for a provisional license system for young novice drivers. (Safety Recommendation H-93-8)
>
> Enact laws that prohibit driving by young novice drivers between certain hours, especially midnight to 5 a.m. (Safety Recommendation H-93-9)

The Safety Board called for a provisional license system as a strategy to reduce crashes involving young novice drivers. Implicit in the Board's recommendation for a provisional license system is a three-stage graduated licensing system with a learner's permit, a provisional

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[7] NTSB Accident Number HWY-02-IH031.

[8] Fifteen-year-old driver license applicants in Montana must have completed driver education. Montana currently has no graduated licensing law.

[9] Letter to the Governors and legislative leaders of the 50 states, the Commonwealth of Puerto Rico, the Territories, and the Mayor and Council of the District of Columbia, dated March 11, 1993, transmitting Safety Recommendations H-93-1 through -9.

or intermediate licensed period, and eventually full unrestricted driving. The terms "provisional," "probationary," and "intermediate" are used interchangeably to describe the second stage of a three-stage graduated license system. With a provisional license system, if certain conditions are violated, the provisional license can be suspended or revoked, or the issuance of an unrestricted license can be deferred. In a three-stage licensing system, restrictions are imposed so that teenage driving takes place in less dangerous circumstances until the driver has had an opportunity to gain driving experience. Examples of elements of a provisional or graduated licensing system include limiting driving to daytime, driving with adult supervision, mandatory seatbelt usage, and remaining accident/violation-free during the learner and intermediate stages (that is, the young novice driver is not cited for any accidents or violations occurring during these periods).

By September 2002, 36 states and the District of Columbia had adopted three-stage graduated license systems consistent with Safety Recommendation H-93-8[10] (figure 3). The length of time for the intermediate stage varies from state to state but is less than 2 years in all states.

In 1993, only eight states placed nighttime driving restrictions on young novice drivers. By September 2002, 35 states and the District of Columbia had enacted some form of restriction on nighttime driving by young novice drivers without a licensed adult driver present.[11]

When the Safety Board considered its 1993 recommendations to reduce youth highway crashes, it did not consider a passenger restriction for the provisional (intermediate or restricted) license period. However, because the Board has continued to investigate accidents such as those described above that involve inexperienced teen drivers with multiple teen passengers, the Board has re-examined the issue of passenger restrictions for young novice drivers.

A 1998 study by Doherty *et al.* of the situational risks of young drivers in Ontario, Canada, analyzed the crash involvement rates of 16- to 19-year-old drivers compared to older drivers by time of day, day of week, and passenger influence. The researchers determined that "the negative effect of passengers on overall accident rates was evident only for 16-19 year old drivers…with accident rates being approximately twice as high with passengers as without. For 16-19 year olds, accident rates were also significantly higher for two or more passengers versus one passenger."[12]

A 1999 paper by Aldridge *et al.* analyzed the impact of passengers on crashes involving young drivers in Kentucky and determined that peer passengers had an adverse effect on crashes.

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[10] AL, AR, CA, CO, DC, DE, FL, GA, ID, IL, IN, IA, LA, ME, MA, MD, MI, MS, MO, NH, NJ, NM, NC, NY, OH, OR, PA, RI, SC, SD, TN, TX, VT, VA, WA, WV, and WI.

[11] Of the 35 states (AL, CA, CO DE, FL, GA, IA, ID, IL, IN, LA, MA, MD, MI, MO, MS, NC, NE, NH, NJ, NM, NY, OH, OR, PA, RI, SC, SD, TN, TX, UT, VA, WA, WI, and WV), nine state laws (GA, IN, IA, MO, NH, OH, RI, VA, and WA) do not encompass the entire time period of 12:00 midnight to 5:00 a.m. (as recommended in H-93-9).

[12] Sean T. Doherty, Jean C. Andrey and Carolyn MacGregor, "The Situational Risks of Young Drivers: The Influence of Passengers, Time of Day and Day of Week on Accident Rates," *Accident Analysis and Prevention*, vol. 30, no. 1 (1998): 45.

The researchers determined that teenage drivers were less likely to cause crashes when traveling with an adult and/or a child. The researchers also found that young drivers have an increased propensity for causing single-vehicle crashes when traveling with peers and that the propensity for single-vehicle crashes involving young drivers also increases with the number of people in the vehicle.[13]

Preusser, Ferguson, and Williams' 1998 analysis of young driver fatalities and the effect of passengers compared rates of fatal crashes and induced exposure. The researchers determined that 16-year-old drivers driving alone were 2.28 times more likely to be involved in a fatal crash than older drivers (ages 30-59) and that this risk increased to 4.72 times that of older drivers when the teen driver was traveling with peer passengers.[14] Williams' 2001 analysis of teenage passengers in motor vehicle crashes indicates that the crash rates of young, novice drivers with passengers present declines once the driver reaches age 18.[15] Williams also found that for drivers aged 30-59, crash rates with passengers were lower than crash rates for 30-59 year-old-drivers driving alone.

A Chen *et al.* 2000 study of passengers as a risk factor for young drivers compared fatality risks by driver age and vehicle occupants. The researchers observed that the highest death rate in the study was for 16-year-old drivers carrying three or more passengers (a rate of 5.61 per 10 million trips or nearly three times that of a 16-year-old driver driving alone). The study noted that the incidence of motor vehicle crashes fatal to 16- and 17-year-old drivers increased with the number of passengers for both male and female drivers during daytime and at night. They concluded that "Nighttime driver restrictions are especially appropriate, but cannot substitute for passenger restrictions, since more than half of the fatal crashes of teenaged drivers with passengers occur during daylight hours."[16]

In a September 1999 study, Chen *et al.* estimated the number of lives saved by passenger limits at different voluntary compliance levels. The researchers assumed that the passenger restriction would last for 1 year and thus would affect almost all 16-year-old and a substantial proportion of 17-year-old drivers. Analyzing FARS and National Personal Transportation Survey data, researchers estimated that nationwide adoption of passenger restrictions for all 16- and one-third of 17-year-old drivers would result in 60 to 350 fewer deaths per year.[17]

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[13] Brian Aldridge, Meredith Himmler, Lisa Aultman-Hall, and Nikiforos Stamatiadis, "Impact of Passengers on Young Driver Safety," *Transportation Research Record 1693*, Committee on Operator Education and Regulation, no. 99-0710, 29.

[14] David F. Preusser, Susan A. Ferguson, and Allan F. Williams, "The Effect of Teenage Passengers on the Fatal Crash Risk of Teenage Drivers," *Accident Analysis and Prevention*, vol. 30, no. 2 (1998): 219.

[15] Allan F. Williams, "Teenage Passengers in Motor Vehicle Crashes: A Summary of Current Research," Insurance Institute for Highway Safety, (December, 2001): 3.

[16] Li-Hui Chen, Susan P. Baker, Elisa R. Braver, Guohua Li, "Carrying Passengers as a Risk Factor for Crashes Fatal to 16- and 17-Year Old Drivers," *Journal of the American Medical Association*, vol 283, no. 12 (2000): 1580, 1583.

[17] Chen, et al. *Potential Benefits of Restrictions on the Transport of Teenage Passengers by Teenage Drivers*, Insurance Institute for Highway Safety (Arlington, 1999) 1-9.

The pattern of findings in these studies shows that the presence of teenage passengers increases the crash risk of teenage drivers, especially at night, and the risk increases as the number of passengers increases. The studies indicated that the presence of passengers does not increase the crash risk for older drivers.

The first passenger restriction laws for provisional (intermediate stage) drivers took effect in 1998 in Georgia and California. According to the Auto Club of Southern California, teenage passenger deaths and injuries resulting from crashes involving 16-year-old drivers declined by 40 percent statewide from 1998 through 2000. In addition, the number of at-fault collisions involving 16-year-old drivers was down by 27 percent.[18]

Currently, 20 states and the District of Columbia[19] have enacted passenger restrictions as part of their graduated driver licensing systems (figure 4).[20] Eight states allow either only one or no passengers up through the time the driver receives an unrestricted license[21] (tables 1 and 2). Nine additional states and the District of Columbia have a passenger restriction of one or zero passengers that lasts for only part of the intermediate stage.[22]

With regard to passenger age, in 16 of the 21 jurisdictions with restrictions, the restriction includes all teenage passengers.[23] In four states,[24] the passenger age restriction varies according to the age of the driver. In North Carolina, if a family member younger than 21 is already a passenger, then no other passengers younger than 21 who are not family members are allowed in the vehicle. An exemption for family or household members is permitted by all but 3 (California, Delaware, Indiana) of the 21 jurisdictions.

Ten states with a passenger restriction provision specify the age of the adult supervising driver (table 2). North Carolina law requires the supervising driver to have held an unrestricted license for 5 years. Nine other states and the District of Columbia also with a passenger restriction provision do not specify the age of the supervising driver. Therefore, the supervising driver in those jurisdictions could conceivably be an 18- or 19-year-old who has recently received an unrestricted license. Safety Board review of FARS data indicates that in fatal crashes involving 14- through 17-year-old drivers, only 16 percent of right front seat passengers (617 of 3,895), the seat where a supervising adult driver would be seated, were age 20 or older.

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[18] August 10, 2001 press release from the Auto Club of Southern California "Graduated Driver License Law Reduces California Teen Passenger Deaths and Injuries 40 Percent."

[19] CA, DE, DC, GA, IN, MA, ME, NC, NJ, NM, NV, OR, SC, TN, TX, UT, VT, VA, WA, WI, and WV.

[20] In CA, GA, TX, UT, VT, VA, and WA, the passenger restriction includes a secondary enforcement provision. That is, a law enforcement officer may not stop a vehicle for violation of the restriction, but may issue a citation only if the vehicle is stopped for another reason.

[21] ME, NJ, NC, NM, TN, TX, VT, AND WI.

[22] CA, DC, GA, IN, MA, NV, OR, UT, VA, and WA.

[23] Seven states' (DE, IN, ME, NJ, TN, VT, WI) restrictions are defined as applying to passengers of any age, while nine jurisdictions' restrictions are defined as applying to passengers below age 20 or 21 (age 20: CA, OR, and WA; age 21: DC, GA, NM, SC, TX, and UT.).

[24] MA, NV, VA, and WV.

The length of time the passenger restriction is in effect varies from state to state, as does the length of the provisional (intermediate) license. In 2 states (Maine and Nevada), both the passenger restriction and the provisional (intermediate) stage are 3 months; 18 of the remaining 19 jurisdictions extend the passenger restriction to 6 months (12 jurisdictions) or longer (6 jurisdictions). The Insurance Institute for Highway Safety recommends that beginning drivers be held in the provisional (intermediate) stage until at least 18 years of age to develop both experience and maturity.[25]

The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO)[26] first adopted a Model Graduated Licensing Law in 1996; however, this model law did not contain a passenger restriction. A restriction was added in a later revision and incorporated into the UVC in 2000. Novice drivers, as defined in the UVC model law, include drivers in both the learner and provisional (intermediate) stages.

Currently, § 6-105 (b)(2) of the UVC provides that—

> an intermediate licensee may not transport passengers younger than 20 years of age unless supervised….While being supervised, the intermediate licensee must be accompanied by a parent, guardian, or other person 21 years or older. The supervisor shall possess a valid driver's license under the laws of this state. The supervisor shall be the only other occupant of the front passenger section of the vehicle.

Thus, according to the UVC, no passengers are allowed in the vehicle unless an adult supervising driver is seated in the front seat. In a footnote, the UVC provides that "States can provide family-related exemptions from the prohibition against unsupervised transporting of teenage passengers, as deemed necessary."

The jurisdictions adopting passenger restrictions have generally followed the UVC model law, particularly in regard to the elements of the passenger restriction:

- No more than one passenger is allowed.
- The passenger restriction is in effect throughout the provisional license period.
- Passengers under age 20 may not ride with provisional license holders without a supervising adult driver present.
- Passenger exemptions are granted for family members to ride with an unsupervised provisional licensed driver.

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[25] Allan Williams and David Mayhew, *Graduated Licensing: A Blueprint for North America*, Insurance Institute for Highway Safety (Arlington, 2000) 6.

[26] The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) is a private, non-profit membership organization dedicated to providing uniformity of traffic laws and regulations through the timely dissemination of information and model legislation on traffic safety issues. The Committee is custodian of the Uniform Vehicle Code (UVC), and adopts model laws addressing specific areas of traffic law. The UVC was first published in 1926, and has played a major role in achieving traffic law uniformity among the states. NCUTLO model laws are developed by a committee composed of state and federal officials and interested private sector experts.

Safety Board analysis of FARS data for which passenger age was known shows that almost 90 percent of passengers (7,960 of 8,848) involved in the 6,796 single-vehicle fatal crashes involving a young novice driver from 1997 through 2001 were under age 20. Therefore, the Board agrees that NCUTLO's restriction on young passengers riding with unsupervised young novice drivers is appropriate.

As previously discussed, research also shows that teenage passengers traveling with teenage drivers results in an increased crash risk. The research is not definitive, however, on the level of risk created by a teenage driver transporting one passenger compared to no passengers. Permitting one passenger (in addition to the young novice driver) may increase distractions and risk-taking behavior. However, the Safety Board recognizes that for other reasons, it may be desirable to travel with another person in the car. Based on the available research, the UVC model law, and FARS data, the Board concludes that by restricting to zero or one the number of passengers carried by young novice drivers during the provisional (intermediate) license stage, states can reduce crashes involving young novice drivers and reduce fatalities among teenage occupants. The Board also concludes that if the passenger restriction and provisional (intermediate) license stage last only a few months, they are unlikely to have a substantial safety benefit. The Board further concludes that permitting young novice drivers (whether in the learner's or provisional stage) to be supervised by other teenage drivers who have obtained unrestricted licenses is inconsistent with the research data that shows the presence of teenage passengers increases the crash risk of teenage drivers. Only seven states (California, Massachusetts, New Jersey, North Carolina, Tennessee, Vermont, and Wisconsin) have provisions that (1) include a three-stage graduated license system, (2) limit passengers to zero or one, (3) extend the passenger restriction to at least 6 months, and (4) mandate that the supervising driver be age 21 or older in both the learner's and provisional stages. The Board, therefore, believes that those 29 states and the District of Columbia that have implemented a 3-stage graduated licensing system should restrict to zero or one the number of passengers that young novice drivers with provisional licenses can carry before they receive an unrestricted license or for at least 6 months (whichever is longer). The Board also believes that supervising adult drivers should be at least 21 years old.

Therefore, the Safety Board recommends that the Governors of Alabama, Arkansas, Colorado, Delaware, Florida, Georgia, Idaho, Indiana, Illinois, Iowa, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, New Hampshire, New Mexico, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Virginia, Washington, West Virginia, and the Mayor of the District of Columbia do the following:

> Restrict young, novice drivers with provisional (intermediate) licenses, unless accompanied by a supervising adult driver who is at least 21 years old, from carrying more than one passenger under the age of 20 until they receive an unrestricted license or for at least 6 months (whichever is longer). (H-02-30)

> Require that the supervising adult driver in the learner's permit stage of your graduated licensing law is age 21 or older. (H-02-31)

The Safety Board also issued Safety Recommendations H-02-31 and H-02-32 to the 14 states (Alaska, Arizona, Connecticut, Hawaii, Kansas, Kentucky, Minnesota, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Utah, and Wyoming) that have not implemented the 3-stage graduated licensing system and the passenger restrictions recommended by the Board. For these 14 states, Safety Recommendation H-93-8 has been classified "Closed—Superseded" by these new recommendations.

Please refer to Safety Recommendations H-02-30 and -31 in your reply. If you need additional information, you may call (202) 314-6170.

Acting Chairman CARMODY and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

Original Signed

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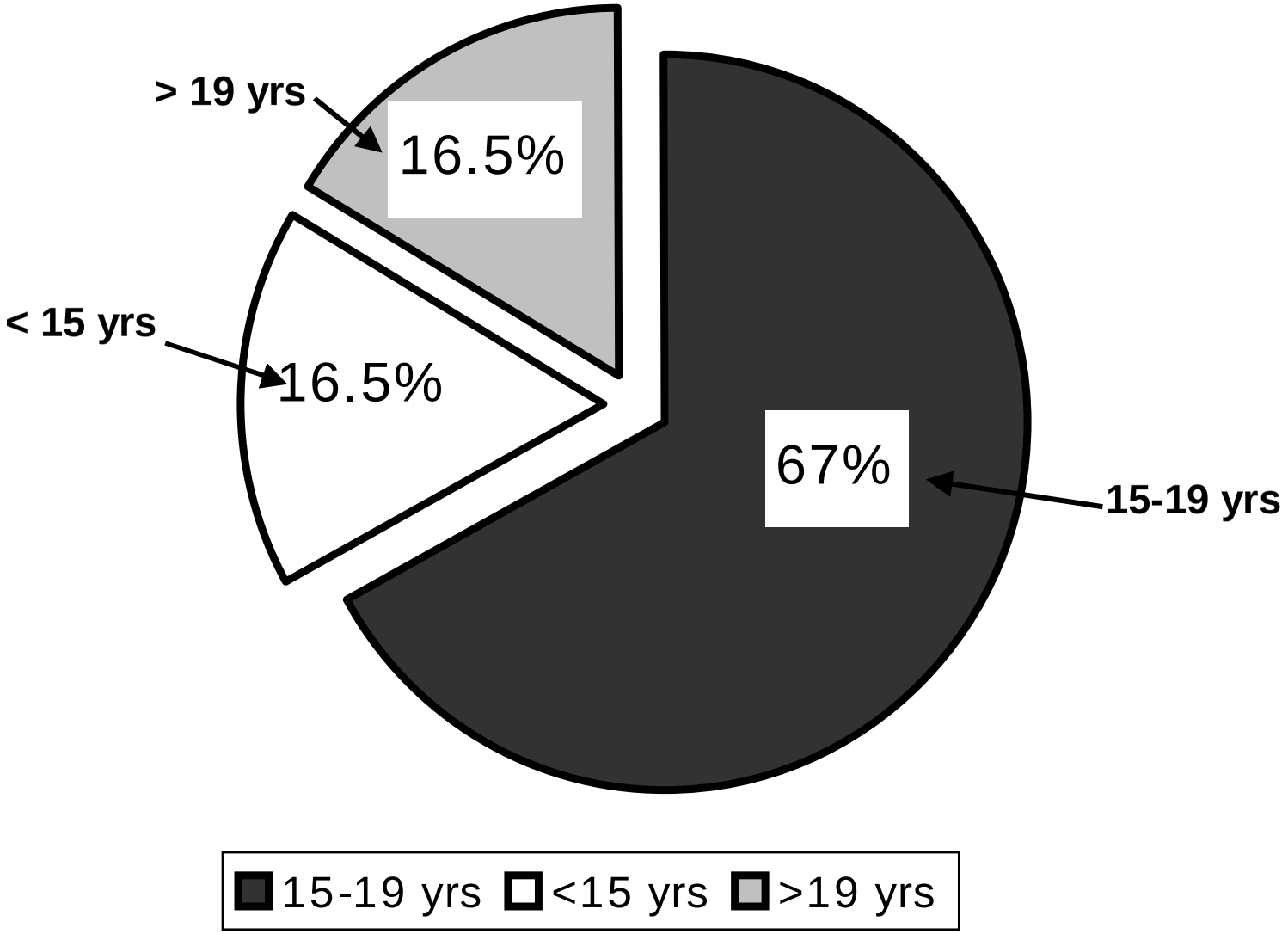
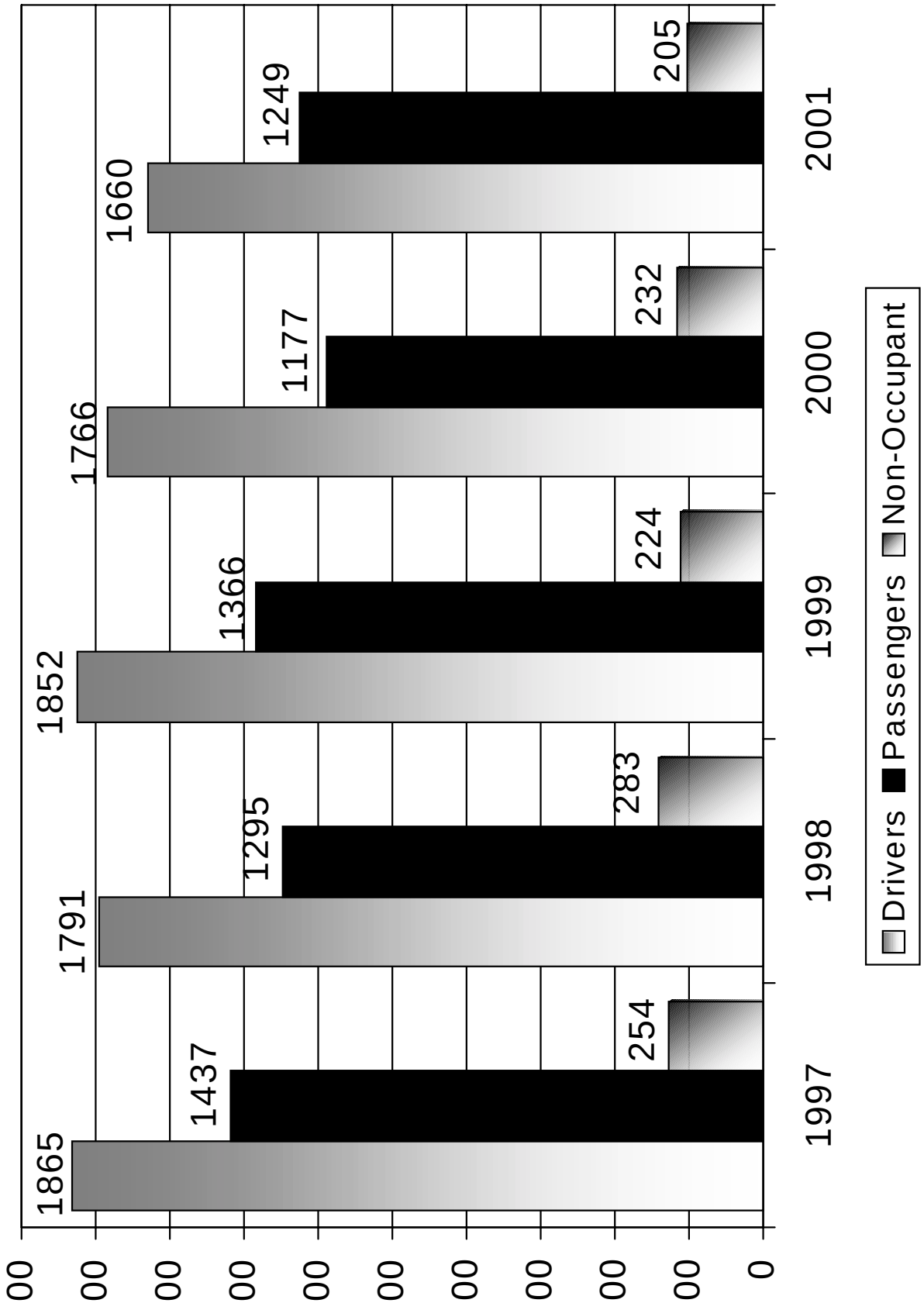
Appendix

Figure 1 -- Age of passengers in fatal crashes involving 14-through 17-year-old drivers (percent)



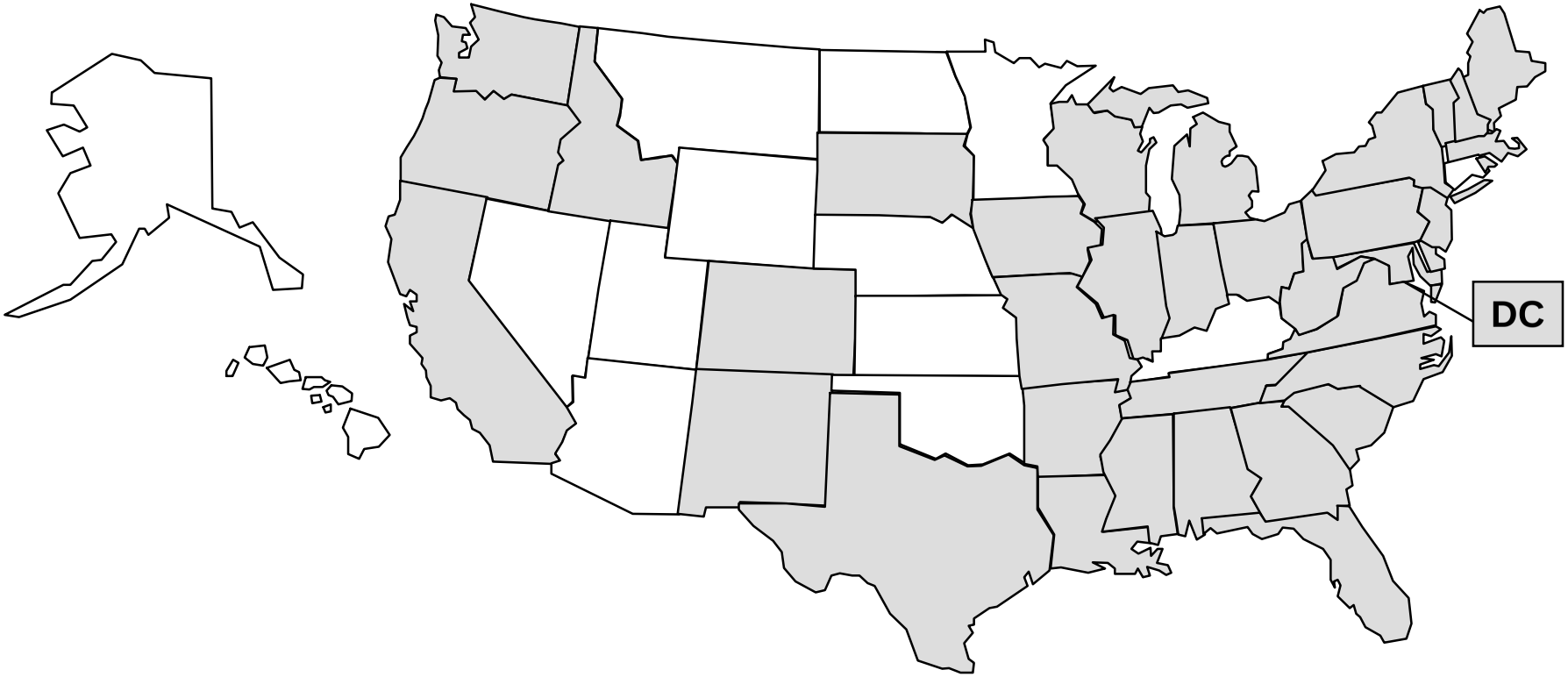
Source: National Highway Traffic Safety Administration Fatality Analysis Reporting System

Figure 2 -- Fatalities involving drivers ages 14 through 17 from 1997 - 2001



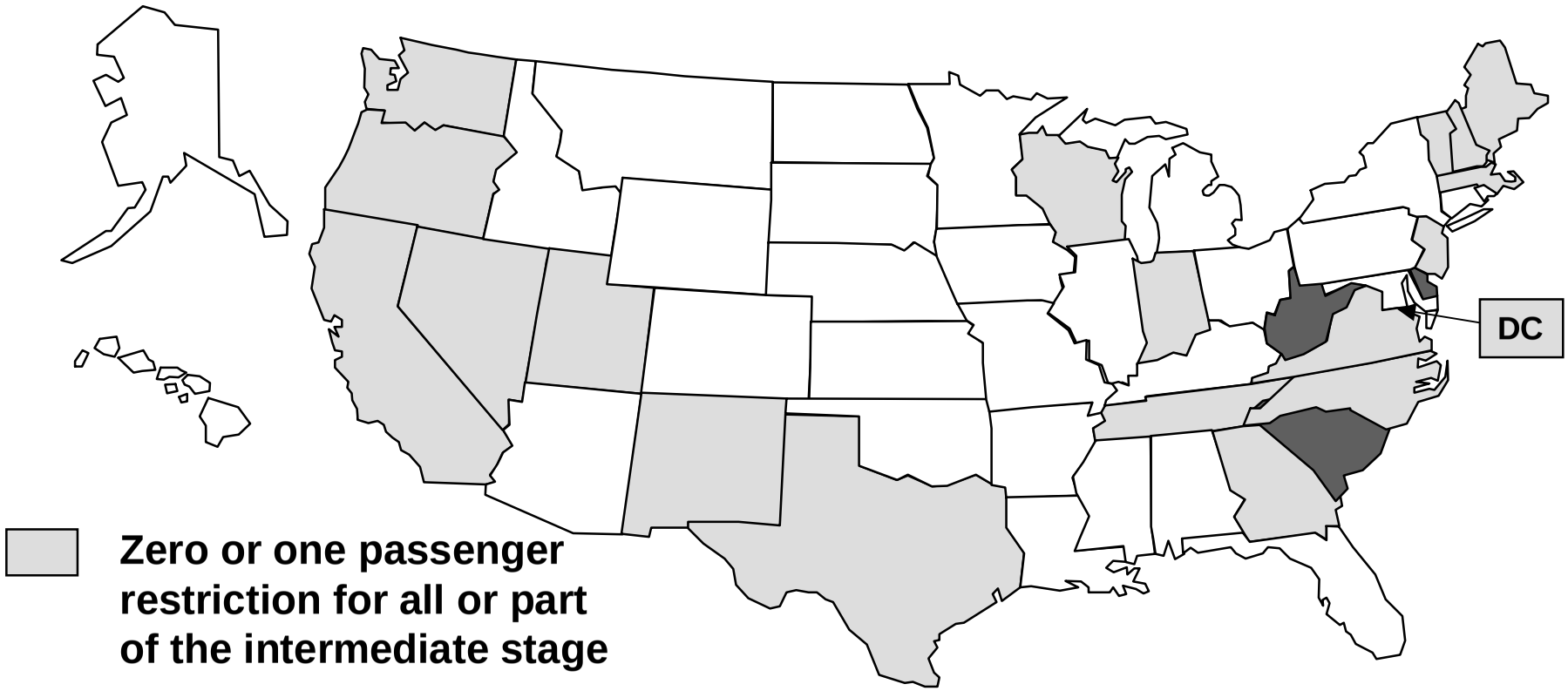
Source: National Highway Traffic Safety Administration Fatality Analysis Reporting System

Figure 3 -- Jurisdictions with 3-stage graduated licensing system



As of September 23, 2002

Figure 4 -- Jurisdictions that restrict young drivers from carrying more than one passenger unless a licensed driver is present



As of September 23, 2002

Table 1
State Graduated Licensing Laws

(Current as of September 30, 2002)

State	GDL 3-stage system (H-93-8)	Nighttime Restriction (H-93-9)	Passenger Restrictions		
			(No. of Passengers)	(Duration, in Months)[1]	Supervising driver must be 21 yrs or older
Alabama	Yes	Yes			
Alaska	Partial				
Arizona	Partial				
Arkansas	Yes				
California	Yes	Yes	-0-	6	Yes
Colorado	Yes	Yes			
Connecticut	Partial				
Delaware	Yes	Yes	2[2]	6	
D.C.	Yes	Yes	1[3]	6	
Florida	Yes	Yes			
Georgia	Yes	Yes	-0-[4]	6	
Hawaii	Partial				
Idaho	Yes	Yes			
Illinois	Yes	Yes			
Indiana	Yes	Yes	-0-	3	Yes
Iowa	Yes	Yes			
Kansas	No				
Kentucky	Partial				
Louisiana	Yes	Yes			
Maine	Yes		-0-	3	
Maryland	Yes	Yes			
Massachusetts	Yes	Yes	-0-	6	Yes
Michigan	Yes	Yes			
Minnesota	Partial				
Mississippi	Yes	Yes			
Missouri	Yes	Yes			
Montana	No				
Nebraska	Partial	Yes			
Nevada	Partial	curfew	-0-[5]	3	
New Hampshire	Yes	Yes			
New Jersey	Yes	Yes	1	6[6]	Yes
New Mexico	Yes	Yes	1	12[6]	
New York	Yes	Yes			
North Carolina	Yes	Yes	1	6[6]	Yes
North Dakota	Partial				
Ohio	Yes	Yes			
Oklahoma	No				
Oregon	Yes	Yes	-0-[4]	6	
Pennsylvania	Yes	Yes			
Rhode Island	Yes	Yes			
South Carolina	Yes	Yes	2[2]	12[6]	Yes
South Dakota	Yes	Yes			
Tennessee	Yes	Yes	1	12[6]	Yes
Texas	Yes	Yes	1	6[6]	
Utah	Partial	Yes	-0-[5]	6	Yes
Vermont	Yes		-0-	6	Yes
Virginia	Yes	Yes	1[3]	9	
Washington	Yes	Yes	-0-[4]	6	
West Virginia	Yes	Yes	3[2]	12[6]	
Wisconsin	Yes	Yes	1	9	Yes
Wyoming	No				

[1] The passenger restriction duration may be shorter than the maximum duration of the intermediate license stage. The intermediate stage in the states varies from 3 months to 2 years. One year is the maximum duration of the intermediate stage in 18 states.

[2] DE and SC allow up to two passengers during the initial portion of the intermediate license stage, but allow a greater number thereafter; WV allows up to three passengers during the intermediate stage.

[3] VA and DC allow one passenger during the initial portion of the intermediate license stage, but allow a greater number thereafter.

[4] GA, OR and WA allow no passengers during the initial portion of the intermediate license stage, but allow a greater number thereafter.

[5] NV and UT have a passenger restriction but do not have a 3-stage system.

[6] This is the minimum duration; the passenger restriction is in effect until qualified for an unrestricted license.

Table 2

Intermediate License Passenger Restrictions in States with a Graduated Licensing Program

State	Number of Passengers	Age of prohibited passengers	Exemptions	Duration of passenger restriction	Supervising Driver requirement as an exception to passenger restriction	Effective Date
NCUTLO	None	Under 20 years	None	Until unrestricted license	Parent, guardian, or other person 21 years or older	
California*	None	Under 20 yrs.	None	First 6 months of intermediate license	No passenger under 20 unless supervised by a 25-year old driver[7]	7/1/98
Delaware	2	Any age	None	6 months	None specified	7/1/99
D. C. • First 6 months • **Thereafter**	1 2	Under 21[8] Under 21	Family	6 months Until unrestricted license	None specified[7] None specified[7]	9/1/00
Georgia*	None 3	Any age Under 21	Family	First 6 months of intermediate license Until unrestricted license	None specified None specified	1/1/02 1/1/98
Indiana	None	Any age	None	First 90 days of intermediate license	No passengers unless supervised by a 21-year-old driver	1/1/99
Maine	None	Any age	Family	Until unrestricted license[9]	No passengers unless supervised by a 20-year-old driver	8/1/00
Massachusetts	None	Under 18	Family	First 6 months of intermediate license	No passengers unless supervised by a 21-year-old driver	11/4/98
Nevada	None	Under 18	Family	90 days if license issued under age 16 60 days if license issued while age 16 30 days if license issued while age 17	None specified	7/1/01
New Jersey	1	Any age	Household	Until unrestricted license	No more than 1 passenger unless supervised by a 21-year-old driver	1/1/01
New Mexico	1	Under 21	Family	Until unrestricted license	None specified[7]	1/1/00
North Carolina	1	[10]	Family	Until unrestricted license	One passenger unless accompanied by a driver who has held unrestricted license for 5 years[1]	12/1/97 12/1/02
Oregon • First 6 months • Second 6 months	None 3	Under 20	Family	6 months Until unrestricted license	None specified[7] None specified[7]	3/1/00
South Carolina	2	Under 21	Family members or students to or from school	Until unrestricted license	No more than 2 passengers unless supervised by a 21-year-old driver[1]	3/5/02

[7] State has a supervising driver requirement as an exception to the nighttime driving restriction.
[8] Passenger must be a licensed driver age 21 or older.
[9] Maine's intermediate license phase is 90 days.
[10] If a family member younger than 21 is already a passenger, then no other passengers younger than 21 who are not family members are allowed.

Intermediate License Passenger Restrictions in States with a Graduated Licensing Program

State	Number of Passengers	Age of prohibited passengers	Exemptions	Duration of passenger restriction	Supervising Driver requirement as an exception to passenger restriction	Effective Date
Tennessee	1	Any age	Family	Until unrestricted license	No more than 1 passenger unless supervised by a 21-year-old driver[1]	7/1/01
Texas*	1	Under 21	Family	Until unrestricted license	None specified	1/1/02
Utah*	None	Under 21	Family Agriculture	First 6 months of intermediate license	No passengers unless accompanied by a licensed driver age 21 or older[1]	7/1/01
Vermont*						
• First 3 months	None	Any age	None	3 months	No passengers unless supervised by a licensed parent/guardian, driving instructor, or driver age 25 or older.	7/1/00
• Second 3 months			Family	Until unrestricted license	Same as first 3 months, except that family members may be transported without a supervising driver	
Virginia*						
• Until age 17	1	Under 18	None	Until age 17	None specified[7]	7/1/01
• Age 17	3		Family	Until age 18 (unrestricted license)	None specified[7]	7/1/98
Washington*						
• First 6 months	None	Under 20	Family Agriculture	6 months	None specified[7]	7/1/01
• Second 6 months	3			Until unrestricted license	None specified[7]	
West Virginia	3	Under 19	Family	Until unrestricted license	None specified[7]	1/1/01
Wisconsin	1	Any age	Family	9 months or until unrestricted license (age 18)	One passenger unless supervised by a licensed parent, guardian, driving instructor, or driver age 21 or older with written parental permission[1]	7/1/00
20 States and D.C.	**7 – None 6 – One 2 – Two 1 – Three 5 – Split**	**7 – Any age 6 – Age 21 3 – Age 20 1 – Age 19 3 – Age 18 1 – Split**	**3 – None 15-Family 1-Household 2- Split 2-Agriculture**	**2 – 3 months 4 – 6 months 1 – 9 months 13 – Until unrestricted license 1 – Various**	**1 – 20 years old 7 – 21 years old 2 – 25 years old 1 – 5 yrs experience**	

* Secondary enforcement (7 states)

As of September 17, 2002

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 8, 2002
In reply refer to: H-02-31 and -32

14 State Governors
(see distribution list)

The National Transportation Safety Board is an independent federal agency charged by Congress with investigating transportation accidents, determining their probable causes, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge you to take action on the safety recommendations in this letter. The Safety Board is interested in these recommendations because they are designed to prevent accidents and save lives.

These recommendations supplement prior Safety Board initiatives to reduce the numbers of teenaged children killed in motor vehicle crashes; specifically, these recommendations address restricting the number of passengers that young novice drivers can carry in their motor vehicles until they receive an unrestricted license and requiring that the supervising adult driver in the learner's permit stage of the graduated licensing law be at least 21 years old. These recommendations are derived from the Board's analysis of the National Highway Traffic Safety Administration's (NHTSA's) Fatality Analysis Reporting System (FARS), the Board's numerous investigations involving young novice drivers, the Board's longstanding state advocacy program related to graduated licensing issues, and the Board's review of relevant research on this issue. As a result of these activities, the Board is issuing 2 new safety recommendations to 14 states. Information supporting these recommendations is discussed below. The Board would appreciate receiving a response from you within 90 days addressing the actions you have taken or intend to take to implement these recommendations.

According to data from NHTSA's FARS, from 1997 through 2001, 16,656 persons died in all crashes involving young novice drivers ages 14 through 17.[1] Of these fatalities, 8,934 were drivers and 6,524 were passengers. In the same crashes, 1,198 non-occupants (pedestrians and cyclists, as examples) also died. Because it is unknown whether the young novice drivers were at fault in the multiple-vehicle crashes but likely were responsible for single-vehicle crashes, the Safety Board examined single-vehicle crashes involving drivers who were 14 through 17 years old to determine the numbers of teenaged children killed in those crashes involving young novice drivers. From 1997 through 2001, 14- through 17-year-old drivers were involved in 6,796 single-vehicle fatal crashes; in these crashes, 7,574 fatalities occurred, of which about 41 percent (3,088) were passengers in the vehicle. Sixty-seven percent of these fatally injured passengers (2,077 of 3,088) were between the ages of 15 and 19 (figure 1)[2]. From 1997 through 2001, the

[1] The FARS system does not provide information on the causality of fatal highway crashes.

[2] Figures and tables are located in the Appendix.

number of persons killed in crashes involving young drivers in the United States changed little, although the number of fatally injured drivers ages 14 through 17 declined slightly (figure 2).

The Safety Board has investigated several accidents over the years involving young novice drivers. The following accidents illustrate the tragic consequences of allowing inexperienced young drivers who have just recently obtained their licenses to drive with multiple teenage passengers in the vehicle.

At 3:55 p.m. on Tuesday, June 18, 2002, a 1991 Chevrolet Lumina, driven by a 16-year-old female and occupied by two other 16-year-old females, was southbound on a two-way country lane and was attempting to cross Route 20 near Lafayette, New York.[3] At the same time the Lumina entered the intersection, a 1999 International tractor/semi-trailer combination vehicle, hauling about 40,000 pounds of steel, entered the intersection westbound on Route 20. The evidence did not clearly indicate whether the Lumina driver had stopped at the stop sign before attempting to cross Route 20. The sight distance at the stop sign was not limited. The combination vehicle was not required to stop. The truck struck the Chevrolet on the driver's door and both vehicles veered off the highway in a southwesterly direction. The driver and front passenger of the Chevrolet were ejected. All the occupants of the Chevrolet received fatal injuries. The driver of the truck received minor injuries. The teenage driver of the Chevrolet had just received her driver's license on April 10, 2002.[4]

About 9:30 p.m. on August 3, 2001, a 16-year-old male was driving a 1999 Ford Taurus in the eastbound inside lane of U.S. Highway 62, 6 miles east of Fort Gibson, Oklahoma.[5] The posted speed limited was 65 mph, the weather was clear and dark, and the roadway was dry. According to witnesses, the teenage driver was driving about 95 mph when he came upon another vehicle in his travel path. He attempted to make an evasive lane change into the outside lane to avoid hitting this vehicle and, in doing so, collided with the rear of a 1999 Peterbilt semi-trailer dump truck in the eastbound outside lane. The impact raised the rear end of the Ford Taurus, causing its windshield and roof to strike the rear of the semi-trailer; the Taurus ultimately came to rest in a southeasterly direction, about 23 feet east of the point of impact. The driver and all three rear seat passengers sustained fatal injuries. The front seat passenger, the only one wearing a seatbelt, sustained serious injuries. All four passengers were 16 years old. The driver of the combination vehicle sustained no injuries. There was no indication of drug and/or alcohol use by either driver prior to the collision. The 16-year-old driver had a valid driver's license with no restrictions.[6]

About 2:00 p.m. on Wednesday, July 31, 2002, a sport utility vehicle (SUV) driven by a recently licensed 15-year-old and carrying five teenage passengers between the ages of 15 and 18 crashed while traveling west at an estimated speed of between 70 and 76 mph on a highway near

[3] NTSB Accident Number HWY-02-IH023.

[4] New York has a graduated licensing law, but does not have a passenger restriction provision.

[5] NTSB Accident Number HWY-01-IH034.

[6] Oklahoma did not have a graduated licensing law at the time of the accident and currently has no graduated licensing law.

Columbus, Montana.[7] The posted highway speed was 70 mph, and the vehicle was negotiating "S" curves and a 5-percent upgrade hill. Weather and road conditions at the time of the accident were clear and dry. According to passenger statements, the driver of the vehicle was engaged in conversations with the passengers and was turning around and talking to passengers in the rear seat when the vehicle went off the road; the driver then overcorrected in an effort to return to the roadway, causing the SUV to go into a broadside skid and to flip three times. The driver and one passenger were ejected through the front of the vehicle, two other passengers were ejected from the side of the vehicle, and two remained inside. The driver suffered fatal injuries. The passengers were transported to area hospitals, where one was treated and released, two were listed in serious condition, and two were listed in critical condition. None of the vehicle's occupants had been wearing seatbelts. No alcohol or drugs were involved in this accident. The driver had received her license on April 20, 2002, providing her with just over 100 days of (potential) licensed driving experience at the time of the accident.[8]

According to NHTSA, in 2000, 6.76 percent of the driving population was age 20 or younger (12.884 million drivers age 20 or younger, 190.625 million total drivers). Of all drivers involved in fatal accidents, 14.28 percent were 15 to 20 years old (8,155 15- to 20-year-old drivers; 57,090 total drivers).

On March 11, 1993, the Safety Board issued recommendations asking the states to take action to reduce the number of youth-related highway crashes and fatalities.[9] Because of the overrepresentation of young novice drivers in traffic fatalities, the Board identified several actions the states could take to reduce these crashes and fatalities, including making improvements in minimum drinking age laws and enforcement, instituting a zero blood alcohol content requirement for drivers under age 21, and making changes in driver licensing and restrictions.

In its 1993 letter, the Safety Board specifically asked the 50 states to do the following relative to graduated licensing:

> Enact laws to provide for a provisional license system for young novice drivers. (Safety Recommendation H-93-8)
>
> Enact laws that prohibit driving by young novice drivers between certain hours, especially midnight to 5 a.m. (Safety Recommendation H-93-9)

The Safety Board called for a provisional license system as a strategy to reduce crashes involving young novice drivers. Implicit in the Board's recommendation for a provisional license system is a three-stage graduated licensing system with a learner's permit, a provisional

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[7] NTSB Accident Number HWY-02-IH031.

[8] Fifteen-year-old driver license applicants in Montana must have completed driver education. Montana currently has no graduated licensing law.

[9] Letter to the Governors and legislative leaders of the 50 states, the Commonwealth of Puerto Rico, the Territories, and the Mayor and Council of the District of Columbia, dated March 11, 1993, transmitting Safety Recommendations H-93-1 through -9.

or intermediate licensed period, and eventually full unrestricted driving. The terms "provisional," "probationary," and "intermediate" are used interchangeably to describe the second stage of a three-stage graduated license system. With a provisional license system, if certain conditions are violated, the provisional license can be suspended or revoked, or the issuance of an unrestricted license can be deferred. In a three-stage licensing system, restrictions are imposed so that teenage driving takes place in less dangerous circumstances until the driver has had an opportunity to gain driving experience. Examples of elements of a provisional or graduated licensing system include limiting driving to daytime, driving with adult supervision, mandatory seatbelt usage, and remaining accident/violation-free during the learner and intermediate stages (that is, the young novice driver is not cited for any accidents or violations occurring during these periods).

By September 2002, 36 states and the District of Columbia had adopted three-stage graduated license systems consistent with Safety Recommendation H-93-8[10] (figure 3). The length of time for the intermediate stage varies from state to state but is less than 2 years in all states.

In 1993, only eight states placed nighttime driving restrictions on young novice drivers. By September 2002, 35 states and the District of Columbia had enacted some form of restriction on nighttime driving by young novice drivers without a licensed adult driver present.[11]

When the Safety Board considered its 1993 recommendations to reduce youth highway crashes, it did not consider a passenger restriction for the provisional (intermediate or restricted) license period. However, because the Board has continued to investigate accidents such as those described above that involve inexperienced teen drivers with multiple teen passengers, the Board has re-examined the issue of passenger restrictions for young novice drivers.

A 1998 study by Doherty *et al.* of the situational risks of young drivers in Ontario, Canada, analyzed the crash involvement rates of 16- to 19-year-old drivers compared to older drivers by time of day, day of week, and passenger influence. The researchers determined that "the negative effect of passengers on overall accident rates was evident only for 16-19 year old drivers…with accident rates being approximately twice as high with passengers as without. For 16-19 year olds, accident rates were also significantly higher for two or more passengers versus one passenger."[12]

A 1999 paper by Aldridge *et al.* analyzed the impact of passengers on crashes involving young drivers in Kentucky and determined that peer passengers had an adverse effect on crashes.

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[10] AL, AR, CA, CO, DC, DE, FL, GA, ID, IL, IN, IA, LA, ME, MA, MD, MI, MS, MO, NH, NJ, NM, NC, NY, OH, OR, PA, RI, SC, SD, TN, TX, VT, VA, WA, WV, and WI.

[11] Of the 35 states (AL, CA, CO DE, FL, GA, IA, ID, IL, IN, LA, MA, MD, MI, MO, MS, NC, NE, NH, NJ, NM, NY, OH, OR, PA, RI, SC, SD, TN, TX, UT, VA, WA, WI, and WV), nine state laws (GA, IN, IA, MO, NH, OH, RI, VA, and WA) do not encompass the entire time period of 12:00 midnight to 5:00 a.m. (as recommended in H-93-9).

[12] Sean T. Doherty, Jean C. Andrey and Carolyn MacGregor, "The Situational Risks of Young Drivers: The Influence of Passengers, Time of Day and Day of Week on Accident Rates," *Accident Analysis and Prevention*, vol. 30, no. 1 (1998): 45.

The researchers determined that teenage drivers were less likely to cause crashes when traveling with an adult and/or a child. The researchers also found that young drivers have an increased propensity for causing single-vehicle crashes when traveling with peers and that the propensity for single-vehicle crashes involving young drivers also increases with the number of people in the vehicle.[13]

Preusser, Ferguson, and Williams' 1998 analysis of young driver fatalities and the effect of passengers compared rates of fatal crashes and induced exposure. The researchers determined that 16-year-old drivers driving alone were 2.28 times more likely to be involved in a fatal crash than older drivers (ages 30-59) and that this risk increased to 4.72 times that of older drivers when the teen driver was traveling with peer passengers.[14] Williams' 2001 analysis of teenage passengers in motor vehicle crashes indicates that the crash rates of young, novice drivers with passengers present declines once the driver reaches age 18.[15] Williams also found that for drivers aged 30-59, crash rates with passengers were lower than crash rates for 30-59 year-old-drivers driving alone.

A Chen *et al.* 2000 study of passengers as a risk factor for young drivers compared fatality risks by driver age and vehicle occupants. The researchers observed that the highest death rate in the study was for 16-year-old drivers carrying three or more passengers (a rate of 5.61 per 10 million trips or nearly three times that of a 16-year-old driver driving alone). The study noted that the incidence of motor vehicle crashes fatal to 16- and 17-year-old drivers increased with the number of passengers for both male and female drivers during daytime and at night. They concluded that "Nighttime driver restrictions are especially appropriate, but cannot substitute for passenger restrictions, since more than half of the fatal crashes of teenaged drivers with passengers occur during daylight hours."[16]

In a September 1999 study, Chen *et al.* estimated the number of lives saved by passenger limits at different voluntary compliance levels. The researchers assumed that the passenger restriction would last for 1 year and thus would affect almost all 16-year-old and a substantial proportion of 17-year-old drivers. Analyzing FARS and National Personal Transportation Survey data, researchers estimated that nationwide adoption of passenger restrictions for all 16- and one-third of 17-year-old drivers would result in 60 to 350 fewer deaths per year.[17]

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[13] Brian Aldridge, Meredith Himmler, Lisa Aultman-Hall, and Nikiforos Stamatiadis, "Impact of Passengers on Young Driver Safety," *Transportation Research Record 1693*, Committee on Operator Education and Regulation, no. 99-0710, 29.

[14] David F. Preusser, Susan A. Ferguson, and Allan F. Williams, "The Effect of Teenage Passengers on the Fatal Crash Risk of Teenage Drivers," *Accident Analysis and Prevention*, vol. 30, no. 2 (1998): 219.

[15] Allan F. Williams, "Teenage Passengers in Motor Vehicle Crashes: A Summary of Current Research," Insurance Institute for Highway Safety, (December, 2001): 3.

[16] Li-Hui Chen, Susan P. Baker, Elisa R. Braver, Guohua Li, "Carrying Passengers as a Risk Factor for Crashes Fatal to 16- and 17-Year Old Drivers," *Journal of the American Medical Association*, vol 283, no. 12 (2000): 1580, 1583.

[17] Chen, et al. *Potential Benefits of Restrictions on the Transport of Teenage Passengers by Teenage Drivers*, Insurance Institute for Highway Safety (Arlington, 1999) 1-9.

The pattern of findings in these studies shows that the presence of teenage passengers increases the crash risk of teenage drivers, especially at night, and the risk increases as the number of passengers increases. The studies indicated that the presence of passengers does not increase the crash risk for older drivers.

The first passenger restriction laws for provisional (intermediate stage) drivers took effect in 1998 in Georgia and California. According to the Auto Club of Southern California, teenage passenger deaths and injuries resulting from crashes involving 16-year-old drivers declined by 40 percent statewide from 1998 through 2000. In addition, the number of at-fault collisions involving 16-year-old drivers was down by 27 percent.[18]

Currently, 20 states and the District of Columbia[19] have enacted passenger restrictions as part of their graduated driver licensing systems (figure 4).[20] Eight states allow either only one or no passengers up through the time the driver receives an unrestricted license[21] (tables 1 and 2). Nine additional states and the District of Columbia have a passenger restriction of one or zero passengers that lasts for only part of the intermediate stage.[22]

With regard to passenger age, in 16 of the 21 jurisdictions with restrictions, the restriction includes all teenage passengers.[23] In four states,[24] the passenger age restriction varies according to the age of the driver. In North Carolina, if a family member younger than 21 is already a passenger, then no other passengers younger than 21 who are not family members are allowed in the vehicle. An exemption for family or household members is permitted by all but 3 (California, Delaware, Indiana) of the 21 jurisdictions.

Ten states with a passenger restriction provision specify the age of the adult supervising driver (table 2). North Carolina law requires the supervising driver to have held an unrestricted license for 5 years. Nine other states and the District of Columbia also with a passenger restriction provision do not specify the age of the supervising driver. Therefore, the supervising driver in those jurisdictions could conceivably be an 18- or 19-year-old who has recently received an unrestricted license. Safety Board review of FARS data indicates that in fatal crashes involving 14- through 17-year-old drivers, only 16 percent of right front seat passengers (617 of 3,895), the seat where a supervising adult driver would be seated, were age 20 or older.

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[18] August 10, 2001 press release from the Auto Club of Southern California "Graduated Driver License Law Reduces California Teen Passenger Deaths and Injuries 40 Percent."

[19] CA, DE, DC, GA, IN, MA, ME, NC, NJ, NM, NV, OR, SC, TN, TX, UT, VT, VA, WA, WI, and WV.

[20] In CA, GA, TX, UT, VT, VA, and WA, the passenger restriction includes a secondary enforcement provision. That is, a law enforcement officer may not stop a vehicle for violation of the restriction, but may issue a citation only if the vehicle is stopped for another reason.

[21] ME, NJ, NC, NM, TN, TX, VT, AND WI.

[22] CA, DC, GA, IN, MA, NV, OR, UT, VA, and WA.

[23] Seven states' (DE, IN, ME, NJ, TN, VT, WI) restrictions are defined as applying to passengers of any age, while nine jurisdictions' restrictions are defined as applying to passengers below age 20 or 21 (age 20: CA, OR, and WA; age 21: DC, GA, NM, SC, TX, and UT.).

[24] MA, NV, VA, and WV.

The length of time the passenger restriction is in effect varies from state to state, as does the length of the provisional (intermediate) license. In 2 states (Maine and Nevada), both the passenger restriction and the provisional (intermediate) stage are 3 months; 18 of the remaining 19 jurisdictions extend the passenger restriction to 6 months (12 jurisdictions) or longer (6 jurisdictions). The Insurance Institute for Highway Safety recommends that beginning drivers be held in the provisional (intermediate) stage until at least 18 years of age to develop both experience and maturity.[25]

The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO)[26] first adopted a Model Graduated Licensing Law in 1996; however, this model law did not contain a passenger restriction. A restriction was added in a later revision and incorporated into the UVC in 2000. Novice drivers, as defined in the UVC model law, include drivers in both the learner and provisional (intermediate) stages.

Currently, § 6-105 (b)(2) of the UVC provides that—

> an intermediate licensee may not transport passengers younger than 20 years of age unless supervised….While being supervised, the intermediate licensee must be accompanied by a parent, guardian, or other person 21 years or older. The supervisor shall possess a valid driver's license under the laws of this state. The supervisor shall be the only other occupant of the front passenger section of the vehicle.

Thus, according to the UVC, no passengers are allowed in the vehicle unless an adult supervising driver is seated in the front seat. In a footnote, the UVC provides that "States can provide family-related exemptions from the prohibition against unsupervised transporting of teenage passengers, as deemed necessary."

The jurisdictions adopting passenger restrictions have generally followed the UVC model law, particularly in regard to the elements of the passenger restriction:

- No more than one passenger is allowed.
- The passenger restriction is in effect throughout the provisional license period.
- Passengers under age 20 may not ride with provisional license holders without a supervising adult driver present.
- Passenger exemptions are granted for family members to ride with an unsupervised provisional licensed driver.

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[25] Allan Williams and David Mayhew, *Graduated Licensing: A Blueprint for North America*, Insurance Institute for Highway Safety (Arlington, 2000) 6.

[26] The National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) is a private, non-profit membership organization dedicated to providing uniformity of traffic laws and regulations through the timely dissemination of information and model legislation on traffic safety issues. The Committee is custodian of the Uniform Vehicle Code (UVC), and adopts model laws addressing specific areas of traffic law. The UVC was first published in 1926, and has played a major role in achieving traffic law uniformity among the states. NCUTLO model laws are developed by a committee composed of state and federal officials and interested private sector experts.

Safety Board analysis of FARS data for which passenger age is known shows that almost 90 percent of passengers (7,960 of 8,848) involved in the 6,796 single-vehicle fatal crashes involving a young novice driver from 1997 through 2001 were under age 20. Therefore, the Board agrees that NCUTLO's restriction on young passengers riding with unsupervised young novice drivers is appropriate.

As previously discussed, research also shows that teenage passengers traveling with teenage drivers results in an increased crash risk. The research is not definitive, however, on the level of risk created by a teenage driver transporting one passenger compared to no passengers. Permitting one passenger (in addition to the young novice driver) may increase distractions and risk-taking behavior. However, the Safety Board recognizes that for other reasons, it may be desirable to travel with another person in the car. Based on the available research, the UVC model law, and FARS data, the Board concludes that by restricting to zero or one the number of passengers carried by young novice drivers during the provisional (intermediate) license stage, states can reduce crashes involving young novice drivers and reduce fatalities among teenage occupants. The Board also concludes that if the passenger restriction and provisional (intermediate) license stage last only a few months, they are unlikely to have a substantial safety benefit. The Board further concludes that permitting young novice drivers (whether in the learner's or provisional stage) to be supervised by other teenage drivers who have obtained unrestricted licenses is inconsistent with the research data that shows the presence of teenage passengers increases the crash risk of teenage drivers. Only seven states (California, Massachusetts, New Jersey, North Carolina, Tennessee, Vermont, and Wisconsin) have provisions that (1) include a three-stage graduated license system, (2) limit passengers to zero or one, (3) extend the passenger restriction to at least 6 months, and (4) mandate that the supervising driver be age 21 or older in both the learner's and provisional stages. The Board, therefore, believes that 14 states (Alaska, Arizona, Connecticut, Hawaii, Kansas, Kentucky, Minnesota, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Utah, and Wyoming) should implement a 3-stage graduated licensing system for young novice drivers, and restrict young novice drivers with provisional or intermediate licenses (second stage), unless accompanied by a supervising adult driver who is at least 21 years old, from carrying more than one passenger under the age of 20 until they receive an unrestricted license or for at least 6 months (whichever is longer). The Board also believes that supervising adult drivers should be at least 21 years old.

Therefore, the Safety Board recommends that the Governors of Alaska, Arizona, Connecticut, Hawaii, Kansas, Kentucky, Minnesota, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Utah, and Wyoming:

> Require that the supervising adult driver in the learner's permit stage of your graduated licensing law is age 21 or older. (H-02-31)

Enact laws to provide for a three-stage graduated licensing system for young novice drivers, and restrict young novice drivers with provisional or intermediate licenses (second stage), unless accompanied by a supervising adult driver who is at least 21 years old, from carrying more than one passenger under the age of 20 until they receive an unrestricted license or for at least 6 months (whichever is longer). (H-02-32)

For Alaska, Arizona, Connecticut, Hawaii, Kansas, Kentucky, Minnesota, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Utah, and Wyoming, Safety Recommendation H-93-8 is classified "Closed—Superseded" by these new recommendations. The Safety Board also issued Safety Recommendations H-02-30 and H-02-31 to those 29 states (Alabama, Arkansas, Colorado, Delaware, Florida, Georgia, Idaho, Indiana, Illinois, Iowa, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, New Hampshire, New Mexico, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Virginia, Washington, West Virginia), and the District of Columbia, that have implemented the recommended 3-stage graduated licensing system but have not restricted to zero or one the number of passengers that young novice drivers can carry during the entire time before they receive an unrestricted license.

Please refer to Safety Recommendations H-02-31 and -32 in your reply. If you need additional information, you may call (202) 314-6170.

Acting Chairman CARMODY and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

Original Signed

By: Carol J. Carmody
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cc: Governors' Highway Safety Representatives

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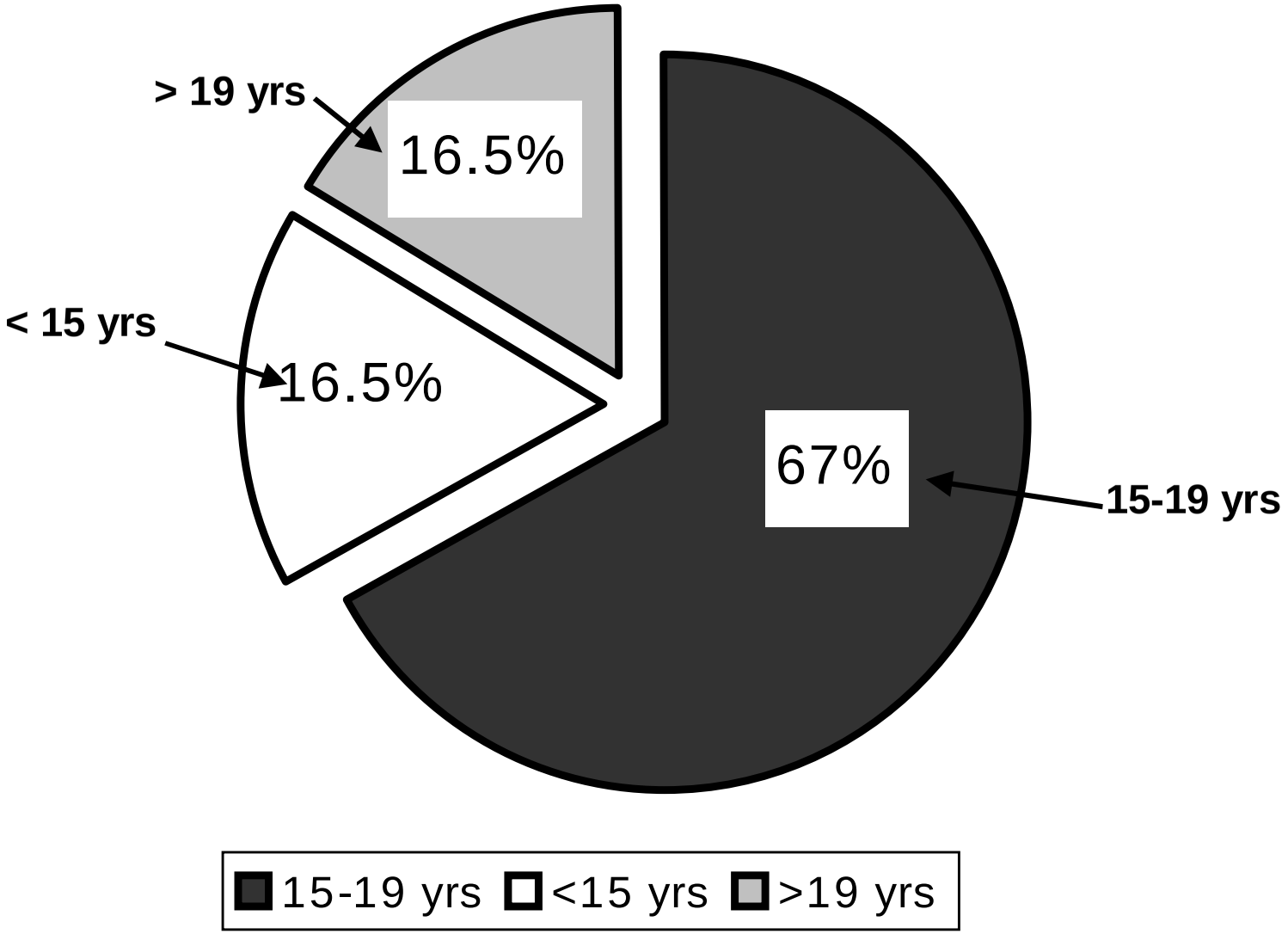
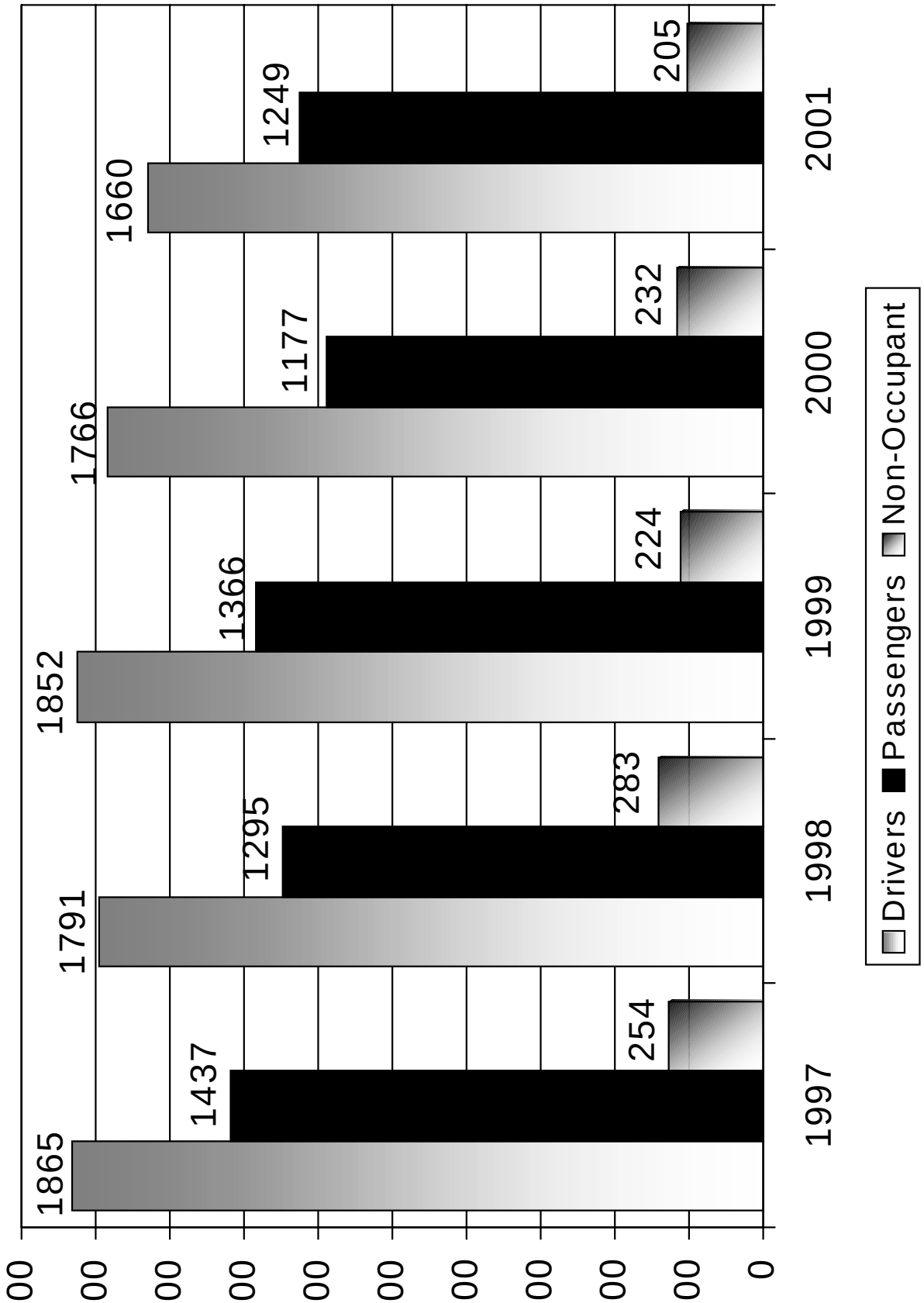
Appendix

Figure 1 -- Age of passengers in fatal crashes involving 14-through 17-year-old drivers (percent)



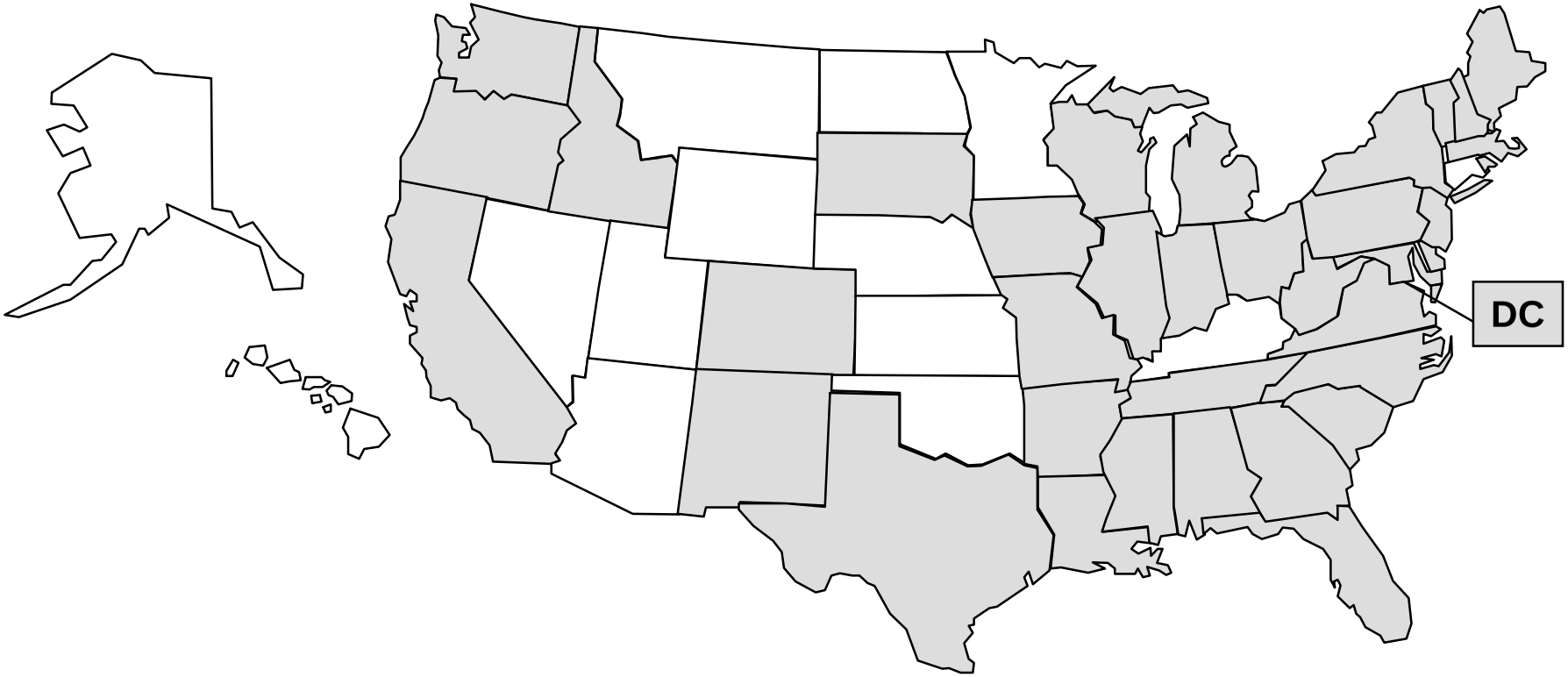
Source: National Highway Traffic Safety Administration Fatality Analysis Reporting System

Figure 2 -- Fatalities involving drivers ages 14 through 17 from 1997 - 2001



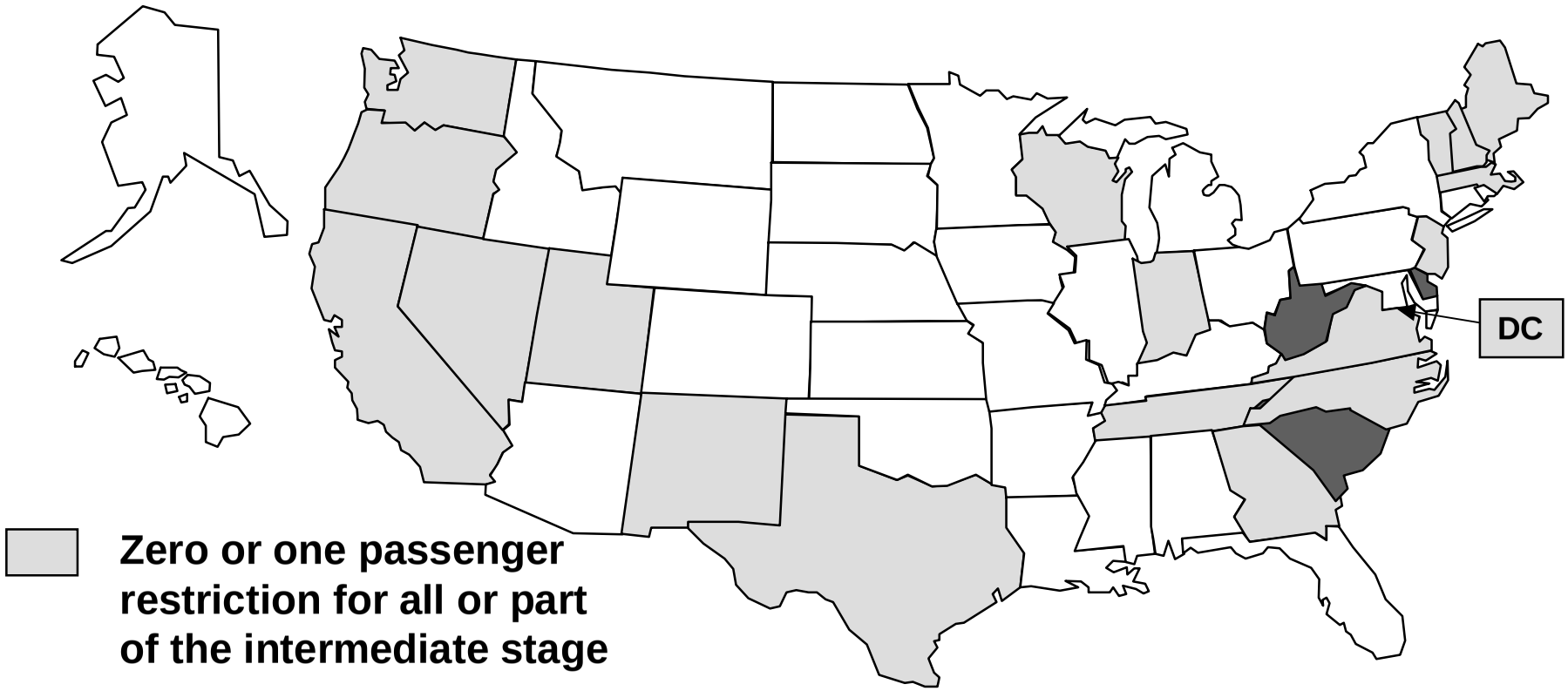
Source: National Highway Traffic Safety Administration Fatality Analysis Reporting System

Figure 3 -- Jurisdictions with 3-stage graduated licensing system



As of September 23, 2002

Figure 4 -- Jurisdictions that restrict young drivers from carrying more than one passenger unless a licensed driver is present



As of September 23, 2002

Table 1
State Graduated Licensing Laws

(Current as of September 30, 2002)

State	GDL 3-stage system (H-93-8)	Nighttime Restriction (H-93-9)	Passenger Restrictions		
			(No. of Passengers)	(Duration, in Months)[1]	Supervising driver must be 21 yrs or older
Alabama	Yes	Yes			
Alaska	Partial				
Arizona	Partial				
Arkansas	Yes				
California	Yes	Yes	-0-	6	Yes
Colorado	Yes	Yes			
Connecticut	Partial				
Delaware	Yes	Yes	2[2]	6	
D.C.	Yes	Yes	1[3]	6	
Florida	Yes	Yes			
Georgia	Yes	Yes	-0-[4]	6	
Hawaii	Partial				
Idaho	Yes	Yes			
Illinois	Yes	Yes			
Indiana	Yes	Yes	-0-	3	Yes
Iowa	Yes	Yes			
Kansas	No				
Kentucky	Partial				
Louisiana	Yes	Yes			
Maine	Yes		-0-	3	
Maryland	Yes	Yes			
Massachusetts	Yes	Yes	-0-	6	Yes
Michigan	Yes	Yes			
Minnesota	Partial				
Mississippi	Yes	Yes			
Missouri	Yes	Yes			
Montana	No				
Nebraska	Partial	Yes			
Nevada	Partial	curfew	-0-[5]	3	
New Hampshire	Yes	Yes			
New Jersey	Yes	Yes	1	6[6]	Yes
New Mexico	Yes	Yes	1	12[6]	
New York	Yes	Yes			
North Carolina	Yes	Yes	1	6[6]	Yes
North Dakota	Partial				
Ohio	Yes	Yes			
Oklahoma	No				
Oregon	Yes	Yes	-0-[4]	6	
Pennsylvania	Yes	Yes			
Rhode Island	Yes	Yes			
South Carolina	Yes	Yes	2[2]	12[6]	Yes
South Dakota	Yes	Yes			
Tennessee	Yes	Yes	1	12[6]	Yes
Texas	Yes	Yes	1	6[6]	
Utah	Partial	Yes	-0-[5]	6	Yes
Vermont	Yes		-0-	6	Yes
Virginia	Yes	Yes	1[3]	9	
Washington	Yes	Yes	-0-[4]	6	
West Virginia	Yes	Yes	3[2]	12[6]	
Wisconsin	Yes	Yes	1	9	Yes
Wyoming	No				

[1] The passenger restriction duration may be shorter than the maximum duration of the intermediate license stage. The intermediate stage in the states varies from 3 months to 2 years. One year is the maximum duration of the intermediate stage in 18 states.

[2] DE and SC allow up to two passengers during the initial portion of the intermediate license stage, but allow a greater number thereafter; WV allows up to three passengers during the intermediate stage.

[3] VA and DC allow one passenger during the initial portion of the intermediate license stage, but allow a greater number thereafter.

[4] GA, OR and WA allow no passengers during the initial portion of the intermediate license stage, but allow a greater number thereafter.

[5] NV and UT have a passenger restriction but do not have a 3-stage system.

[6] This is the minimum duration; the passenger restriction is in effect until qualified for an unrestricted license.

Table 2

Intermediate License Passenger Restrictions in States with a Graduated Licensing Program

State	Number of Passengers	Age of prohibited passengers	Exemptions	Duration of passenger restriction	Supervising Driver requirement as an exception to passenger restriction	Effective Date
NCUTLO	None	Under 20 years	None	Until unrestricted license	Parent, guardian, or other person 21 years or older	
California*	None	Under 20 yrs.	None	First 6 months of intermediate license	No passenger under 20 unless supervised by a 25-year old driver[7]	7/1/98
Delaware	2	Any age	None	6 months	None specified	7/1/99
D. C. • First 6 months • **Thereafter**	1 2	Under 21[8] Under 21	Family	6 months Until unrestricted license	None specified[7] None specified[7]	9/1/00
Georgia*	None 3	Any age Under 21	Family	First 6 months of intermediate license Until unrestricted license	None specified None specified	1/1/02 1/1/98
Indiana	None	Any age	None	First 90 days of intermediate license	No passengers unless supervised by a 21-year-old driver	1/1/99
Maine	None	Any age	Family	Until unrestricted license[9]	No passengers unless supervised by a 20-year-old driver	8/1/00
Massachusetts	None	Under 18	Family	First 6 months of intermediate license	No passengers unless supervised by a 21-year-old driver	11/4/98
Nevada	None	Under 18	Family	90 days if license issued under age 16 60 days if license issued while age 16 30 days if license issued while age 17	None specified	7/1/01
New Jersey	1	Any age	Household	Until unrestricted license	No more than 1 passenger unless supervised by a 21-year-old driver	1/1/01
New Mexico	1	Under 21	Family	Until unrestricted license	None specified[7]	1/1/00
North Carolina	1	[10]	Family	Until unrestricted license	One passenger unless accompanied by a driver who has held unrestricted license for 5 years[1]	12/1/97 12/1/02
Oregon • First 6 months • Second 6 months	None 3	Under 20	Family	6 months Until unrestricted license	None specified[7] None specified[7]	3/1/00
South Carolina	2	Under 21	Family members or students to or from school	Until unrestricted license	No more than 2 passengers unless supervised by a 21-year-old driver[1]	3/5/02

[7] State has a supervising driver requirement as an exception to the nighttime driving restriction.
[8] Passenger must be a licensed driver age 21 or older.
[9] Maine's intermediate license phase is 90 days.
[10] If a family member younger than 21 is already a passenger, then no other passengers younger than 21 who are not family members are allowed.

Intermediate License Passenger Restrictions in States with a Graduated Licensing Program

State	Number of Passengers	Age of prohibited passengers	Exemptions	Duration of passenger restriction	Supervising Driver requirement as an exception to passenger restriction	Effective Date
Tennessee	1	Any age	Family	Until unrestricted license	No more than 1 passenger unless supervised by a 21-year-old driver[1]	7/1/01
Texas*	1	Under 21	Family	Until unrestricted license	None specified	1/1/02
Utah*	None	Under 21	Family Agriculture	First 6 months of intermediate license	No passengers unless accompanied by a licensed driver age 21 or older[1]	7/1/01
Vermont*						
• First 3 months	None	Any age	None	3 months	No passengers unless supervised by a licensed parent/guardian, driving instructor, or driver age 25 or older.	7/1/00
• Second 3 months			Family	Until unrestricted license	Same as first 3 months, except that family members may be transported without a supervising driver	
Virginia*						
• Until age 17	1	Under 18	None	Until age 17	None specified[7]	7/1/01
• Age 17	3		Family	Until age 18 (unrestricted license)	None specified[7]	7/1/98
Washington*						
• First 6 months	None	Under 20	Family Agriculture	6 months	None specified[7]	7/1/01
• Second 6 months	3			Until unrestricted license	None specified[7]	
West Virginia	3	Under 19	Family	Until unrestricted license	None specified[7]	1/1/01
Wisconsin	1	Any age	Family	9 months or until unrestricted license (age 18)	One passenger unless supervised by a licensed parent, guardian, driving instructor, or driver age 21 or older with written parental permission[1]	7/1/00
20 States and D.C.	**7 – None 6 – One 2 – Two 1 – Three 5 – Split**	**7 – Any age 6 – Age 21 3 – Age 20 1 – Age 19 3 – Age 18 1 – Split**	**3 – None 15-Family 1-Household 2- Split 2-Agriculture**	**2 – 3 months 4 – 6 months 1 – 9 months 13 – Until unrestricted license 1 – Various**	**1 – 20 years old 7 – 21 years old 2 – 25 years old 1 – 5 yrs experience**	

* Secondary enforcement (7 states)

As of September 17, 2002

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 27, 2002

In reply refer to: R-02-23

Mr. Paul Tellier
President and Chief Executive Officer
Canadian National Railway
935 de La Gauchetière Street West
16th Floor
Montreal, Quebec H3B 2M9
Canada

The National Transportation Safety Board is an independent U.S. Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

The recommendation is derived from the Safety Board's investigation of the collision of two Canadian National/Illinois Central Railway (CN/IC) trains near Clarkston, Michigan, on November 15, 2001, and is consistent with the evidence we found and the analysis we performed.[1] As a result of this investigation, the Safety Board has issued four safety recommendations, one of which is addressed to the Canadian National Railway (because the CN/IC is a subsidiary of the Canadian National Railway). Information supporting this recommendation is discussed below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

On November 15, 2001, about 5:54 a.m., eastern standard time, CN/IC southbound train 533 and northbound train 243 collided near Clarkston, Michigan. The collision occurred on the CN/IC Holly Subdivision at a switch at the south end of a siding designated as the Andersonville siding. Train 533 had been operating in a southward direction through the siding and was traveling at 13 mph when it struck train 243. Signal 14LC at the turnout for the siding displayed a stop indication, but train 533 did not stop before proceeding onto the mainline track. Train 243 was operating northward on a proceed signal on the single main track about 30 mph when the trains collided. Both crewmembers of train 243 were fatally injured; the two

[1] For additional information, see forthcoming Railroad Accident Report—*Collision of Two Canadian National/Illinois Central Railway Trains near Clarkston, Michigan, November 15, 2001* (NTSB/RAR-02/04).

crewmembers of train 533 sustained serious injuries. The total cost of the accident was approximately $1.4 million.

The National Transportation Safety Board determined that the probable cause of the November 15, 2001, CN/IC accident in Clarkston, Michigan, was the train 533 crewmembers' fatigue, which was primarily due to the engineer's untreated and the conductor's insufficiently treated obstructive sleep apnea.

The CN/IC has a fatigue awareness training program that includes a guidebook for CN/IC employees and their families from Circadian Technologies, Inc. The course material addresses many fatigue-related issues, such as shift work, work-rest schedules, and proper regimens of health and diet, as well as sleep disorders, including obstructive sleep apnea. The Safety Board commends the CN/IC for its development and use of such a program in addressing the important safety consequences of fatigue. However, the program is not part of a required CN/IC training program, and the CN/IC does not document which of its employees have taken the course. Neither the engineer nor the conductor of train 533 could recall having taken the course. The Safety Board concluded that ensuring that all railroad employees who carry out safety-sensitive duties receive training in fatigue awareness will make these employees more aware of the dangerous and debilitating effects of fatigue on performance and could reduce the incidence of fatigue-related employee impairment.

Therefore, the National Transportation Safety Board makes the following safety recommendation to the Canadian National Railway:

> Require all your employees in safety-sensitive positions to take fatigue awareness training and document when employees have received this training. (R-02-23)

The Safety Board also issued safety recommendations to the Federal Railroad Administration. In your response to the recommendation in this letter, please refer to Safety Recommendation R-02-23. If you need additional information, you may call (202) 314-6177.

Acting Chairman CARMODY and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

Original Signed

By: Carol J. Carmody
Acting Chairman

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 27, 2002

In reply refer to: R-02-24 through -26

Honorable Allan Rutter
Administrator
Federal Railroad Administration
1120 Vermont Avenue, N.W.
Washington, D.C. 20590

On November 15, 2001, about 5:54 a.m., eastern standard time, Canadian National/Illinois Central Railway (CN/IC) southbound train 533 and northbound train 243 collided near Clarkston, Michigan. The collision occurred on the CN/IC Holly Subdivision at a switch at the south end of a siding designated as the Andersonville siding. Train 533 had been operating in a southward direction through the siding and was traveling at 13 mph when it struck train 243. Signal 14LC at the turnout for the siding displayed a stop indication, but train 533 did not stop before proceeding onto the mainline track. Train 243 was operating northward on a proceed signal on the single main track about 30 mph when the trains collided. Both crewmembers of train 243 were fatally injured; the two crewmembers of train 533 sustained serious injuries. The total cost of the accident was approximately $1.4 million.[1]

The National Transportation Safety Board determined that the probable cause of the November 15, 2001, CN/IC accident in Clarkston, Michigan, was the train 533 crewmembers' fatigue, which was primarily due to the engineer's untreated and the conductor's insufficiently treated obstructive sleep apnea.

The Safety Board is concerned that in this case, both crewmembers of train 533 had been told by their private physicians that they had (or likely had) obstructive sleep apnea (OSA), but neither employee informed the CN/IC of his potentially incapacitating condition. Further, the CN/IC did not detect the conditions through other means, such as medical examinations.

The company physical examinations performed for the CN/IC did not include questions about sleeping disorders or other chronic problems that might cause performance-impairing fatigue.

Federal Railroad Administration (FRA) regulations require that engineers be certified as qualified locomotive engineers at least once every 3 years.[2] The medical examination, which is a

[1] For additional information, see forthcoming Railroad Accident Report—*Collision of Two Canadian National/Illinois Central Railway Trains near Clarkston, Michigan, November 15, 2001* (NTSB/RAR-02/04).

[2] See 49 *Code of Federal Regulations* 240.201.

prerequisite to engineer certification, focuses on specific vision and hearing acuity standards.[3] FRA regulations do not provide guidance regarding general or specific medical conditions that should be considered in the course of the examination. Many railroads use questionnaire-type forms filled out by the employee in conducting these examinations.

No standard medical examination form is used in the U.S. railroad industry. The Safety Board reviewed a sample of the medical examination forms used by Class I railroads and found that the typical medical examination form does not include questions regarding sleep problems. Similar to the other railroad forms the Safety Board reviewed, the form used by the CN/IC had no questions that specifically addressed sleeping problems or disorders. The Safety Board next evaluated the medical examination forms used in other modes of transportation to determine the extent to which they request medical information about sleep disorders.

In the maritime industry, the U.S. Coast Guard published a Navigation and Vessel Inspection Circular (NVIC) in 1998 to provide guidelines for evaluating the physical condition of a merchant marine license (or document) applicant. Among other guidance, the NVIC prompts the examining physician to ask the applicant about various sleep problems, including narcolepsy and somnambulism, and any other condition that could result in performance deterioration.

A driver undergoing a physical examination for commercial motor vehicle licensing must complete the health history section of the Federal Motor Carrier Safety Administration's (FMCSA's) medical examination form, and the medical examiner is encouraged to discuss with the driver the severity of any problems the driver reports. The form's history section requests that the driver answer "yes" or "no" to a variety of medical condition questions. Any "yes" response requires further clarification by the driver, including the onset date, diagnosis, treating physician's name and address, any current limitation, and any prescribed or over-the-counter medications used regularly or recently. The history section includes a question specifically inquiring about sleep problems, asking the driver if he or she has experienced "Sleep disorders, pauses in breathing while asleep, daytime sleepiness, loud snoring."

For the aviation industry, guidance to Federal Aviation Administration Aviation Medical Examiners in the Fall 2001 Federal Air Surgeon's Bulletin notes that

> [A]s for the medical certification of sleep apnea, the [Aviation Medical Examiner] should defer the case to the Regional Flight Surgeon or the [Aerospace Medicine Certification Division].… If… symptoms are persistent or [treatment is] not completely successful, we will require a Maintenance of Wakefulness Test….

The Safety Board considers that the U.S. rail industry, as well as the marine, highway, and aviation transportation modes, should take into account the serious effects that sleeping disorders could have on the performance of its employees who fulfill safety-sensitive duties. The Safety Board concluded that because the U.S. rail industry does not have a comprehensive medical examination form that includes questions about sleeping disorders, railroads may find it

[3] See 49 *Code of Federal Regulations* 240.121.

difficult to identify employees at risk for fatigue impairment due to the effects of sleeping disorders. Therefore, the Safety Board believes that the FRA should develop a standard medical examination form that includes questions regarding sleep problems and require that the form be used, pursuant to 49 *Code of Federal Regulations* Part 240, to determine the medical fitness of locomotive engineers; the form should also be available for use to determine the medical fitness of other employees in safety-sensitive positions.

Aside from requiring regular engineer certification (involving medical examination), Federal regulations provide little guidance concerning when, how, or if rail employees should report medical conditions such as sleeping disorders to their railroads. No Federal regulation requires that a railroad employee notify the railroad of a medical condition, even if the employee considers that the condition could affect his or her performance. (Although not a Federal regulation, many railroads require employees in safety-sensitive positions to notify a medical official of their use of prescribed or over-the-counter medications.)

No Federal regulation for the railroad industry requires a physician to report a patient's medical conditions to his employer. Federal regulations do require locomotive engineers to report deteriorating hearing and vision to company officials whenever deterioration may occur,[4] but neither the engineers nor their private physicians are required to report a deterioration of any other medical condition that might affect their performance. Consequently, unless the railroad employee is diagnosed with a particular condition during his company's required physical examination or voluntarily provides the railroad with medical information diagnosed by a private physician, the railroad may never learn of a safety-critical employee's potentially performance-impairing medical condition.

The CN/IC, in a letter to the Safety Board, stated:

> Unfortunately, under current laws designed to protect privacy rights, the CN/IC cannot demand that a person divulge all medical issues if the person and the physician see no reason that the condition would affect the ability of the employee to perform their job. CN/IC is at the mercy of the employee and their doctor to provide us with critical information. Most often, employees afraid of losing their jobs will not voluntarily communicate protected, and/or privileged medical information.

In the rail transit industry, the Safety Board is aware of at least one company, the Southeastern Pennsylvania Transit Authority (SEPTA), which has implemented a program under which its operating employees bring medical conditions requiring the use of prescribed medications to the attention of SEPTA's medical department. Under the SEPTA program, if the employee has been prescribed a medication that may affect the employee's performance, he or she is required to report such medication use to the SEPTA medical department, using a form provided by SEPTA that must be completed by the physician. The form is primarily designed to report medication use, but it does have a section in which the physician is to provide the patient's

[4] See 49 *Code of Federal Regulations* 240.121.

diagnosis, enabling the SEPTA medical department to determine whether the condition itself may affect the employee's performance of safety-sensitive duties.

Although the SEPTA program is a positive step with respect to ensuring that transportation systems are notified of significant medical issues affecting their personnel who fulfill safety-sensitive duties, the program's narrow focus on medications limits its value. In the case of the Clarkston accident, for example, because people with OSA typically are not prescribed medications for this condition, neither the train 533 engineer nor the conductor would likely ever have been required, under the SEPTA program, to report this condition. Therefore, had a reporting program identical to SEPTA's been implemented by the CN/IC, the railroad would have been no more likely to have been informed of the crewmembers' OSA.

Unlike U.S. regulations concerning medical reporting within the railroad industry, Canadian regulations require a physician or optometrist to immediately disclose to the company any potentially hazardous medical condition of a railroad employee that might affect the employee's performance. In September 2000, Bill C-58 of the Canadian Railway Safety Act, which concerns elements of the medical examinations for employees in safety-critical operations, became effective. The Canadian regulations, in part, require physicians and optometrists to notify the railway company's medical adviser if an employee has a medical condition that could be a threat to safe railway operations.

Had the reporting system now being used in Canada been in effect in the United States, the physicians who treated the two train 533 crewmembers would have been required to report to the CN/IC any condition that they considered posed a threat to safe railway operations. Consequently, the crewmembers' physicians might have been more likely to inform the CN/IC that the two train 533 crewmembers had (or likely had) OSA.

The Clarkston accident demonstrates that a medical condition such as OSA, which neither the employee nor the employee's physician is currently required to report to the railroad, can impair the performance of, or even incapacitate, an employee responsible for safety-sensitive duties. OSA is widely recognized as a chronic condition that can cause fatigue and excessive daytime sleepiness. Research has been conducted analyzing the impact of OSA on the health, sleep, and alertness of railroad workers.[5] With respect to rail safety, the research found that those railroad workers with OSA indications reported that they sometimes lost concentration and might have missed track signals. In the Clarkston accident, a train engineer with indications of OSA and a conductor with less than optimally treated OSA did miss a stop signal, resulting in a fatal collision. Consequently, the Safety Board concluded that because current Federal regulations do not require railroad employees who carry out safety-sensitive duties to report to the railroad any medical condition that might result in incapacitation or significant impairment, such employees are less likely to notify their railroads about medical conditions that could negatively affect their performance of safety-critical tasks.

[5] A. Aguirre, A. Heitmann, U. Trutschel, K. Mathews, R. Khuri, P. Gerber, and M. Moore-Ede, "Sleep Apnea as a Risk Factor in Railroad Operations." Abstract contained in *Shiftwork International Newsletter*, Vol. 14, No. 1, May 1997. The study is unpublished.

The Safety Board notes that medical conditions that might lead to incapacitation or significant impairment cover a broad range of disorders, including, for example, heart disease, seizure disorders, insulin-dependent diabetes, migraine headaches, psychiatric disorders, severe asthma, etc., as well as fatigue-related conditions such as sleeping disorders and chronic fatigue. Consequently, for a railroad to be able to proactively safeguard its operations, the railroad must be notified whenever its employees in safety-sensitive positions have any such medical condition at a level of severity likely to incapacitate or significantly affect the performance of the employee. Therefore, the Safety Board believes that the FRA should require that any medical condition that could incapacitate, or seriously impair the performance of, an employee in a safety-sensitive position be reported to the railroad in a timely manner.

Federal regulations discuss the role of a treating medical practitioner or a physician designated by the railroad in making a good faith judgment of whether employees taking prescribed or over-the-counter medications are fit to perform their assigned duties safely.[6] These regulations allow a company to disqualify an employee from performing duties if the medical practitioner or designated railroad physician determines that the medications could affect the employee's ability to perform the job safely. However, FRA guidance regarding medical certification is limited to regulations concerning medications and minimum vision and hearing standards. (The vision and hearing minimum standards relate only to locomotive engineers.)

No FRA guidance addresses medical conditions affecting railroad employees. No regulations require the railroad's designated medical physician to disqualify an employee from performing duties because of a particular medical condition (other than those conditions that might affect vision or hearing or involve medication use), regardless of whether the condition could potentially incapacitate the employee or impair the employee's performance.

In this accident, the train 533 crewmembers were incapacitated at least in part due to the effects of the medical condition OSA, which their private physicians had either detected or strongly suspected. Neither employee provided this medical information to the CN/IC, nor did their physicians notify the CN/IC. However, under current Federal regulations, even had the CN/IC-designated medical physician been aware of the crewmembers' OSA, the CN/IC would not have been required to evaluate the crewmembers for fitness for duty because of their OSA. That is, because the train 533 crewmembers were not taking medications for OSA and because it did not affect their hearing or vision, this condition would not, under Federal law, necessarily have disqualified them from operating a train. Under current regulations, therefore, railroad companies decide for themselves if an employee's existing medical condition will be evaluated to determine whether the crewmember can safely perform his or her duties. The Safety Board concluded that limiting a railroad's required medical regulation of employees responsible for safety-sensitive duties to issues of vision, hearing, and medication use fails to address a range of medical conditions that may negatively affect employee performance.

As the Clarkston accident indicated, employees who carry out safety-sensitive duties and who have potentially incapacitating or performance-impairing medical conditions (such as OSA) may need to be medically assessed before they can be considered fit for duty. Therefore, the

[6] See 49 *Code of Federal Regulations* 219.103.

Safety Board believes that the FRA should require that, when a railroad becomes aware that an employee in a safety-sensitive position has a potentially incapacitating or performance-impairing medical condition, the railroad prohibit that employee from performing any safety-sensitive duties until the railroad's designated physician determines that the employee can continue to work safely in a safety-sensitive position.

Therefore, the National Transportation Safety Board makes the following safety recommendations to the Federal Railroad Administration:

> Develop a standard medical examination form that includes questions regarding sleep problems and require that the form be used, pursuant to 49 *Code of Federal Regulations* Part 240, to determine the medical fitness of locomotive engineers; the form should also be available for use to determine the medical fitness of other employees in safety-sensitive positions. (R-02-24)
>
> Require that any medical condition that could incapacitate, or seriously impair the performance of, an employee in a safety-sensitive position be reported to the railroad in a timely manner. (R-02-25)
>
> Require that, when a railroad becomes aware that an employee in a safety-sensitive position has a potentially incapacitating or performance-impairing medical condition, the railroad prohibit that employee from performing any safety-sensitive duties until the railroad's designated physician determines that the employee can continue to work safely in a safety-sensitive position. (R-02-26)

The Safety Board also issued one safety recommendation to the Canadian National Railway. In your response to the recommendations in this letter, please refer to Safety Recommendations R-02-24 through -26. If you need additional information, you may call (202) 314-6177.

Acting Chairman CARMODY and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

Original Signed

By: Carol J. Carmody
Acting Chairman